# EDUCATIONAL REVIEW

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## I

## THE UNIVERSITIES OF GERMANY

It is not only in America that things can be done quickly. The German too is capable of forced marches on demand; and he generally reaches his destination in good order, and *schlagfertig*.

The Imperial German Government, in arranging for the Chicago Exposition the educational exhibit which called forth so much admiration, wisely decided that the presentation of the work done by its universities, the crowning glory of its educational system, would be made much more intelligible and complete by a detailed account of the constitution, aims, and methods of those famous schools. The undertaking was put in charge of Professor W. Lexis of Göttingen; and in three months the work was written and published!

*Die deutschen Universitäten*[1] is a work in two volumes, large octavo, of 620 and 406 pages. The type and paper are of an elegance seen but seldom in German publications, while the text is remarkably free from misprints, when one considers the haste imposed on all concerned in the publication. The plan of arrangement is as follows: The *General Part* is composed of (1) a description of the character and historical development of the German universities, by Professor Paulsen of Berlin, and (2) a statistical account of the same, by Professor Conrad of Halle. Both together, comprising 168 pages, serve as an introduction to the detailed accounts which follow. The

[1] *Die deutschen Universitäten*, herausgegeben von W. Lexis. Berlin: A. Asher & Co., 1893, 2 Bde.

*Detailed Part*, in the form of separate and independent chapters written by specialists of note, traces the progress of scientific investigation in the fields of research covered by the various faculties, and adds in many cases more particular descriptions of the equipment of one or another university for work in certain fields. The accounts of the faculties of Evangelical and of Roman Catholic theology, of law, and the "humanistic" division of the faculty of philosophy, fill out the remainder of the first volume; the second comprises the natural science division of the last-named faculty, and the faculty of medicine.

This arrangement is in itself characteristic, as showing that to the German mind the natural lines of cleavage are not the lines of demarcation between the different universities. The plan here chosen has the great advantage of stating in compact form the advance of science in various fields for which credit is due not so much to this or that university as to the universities as a whole. It throws a strong light upon the fact that with the great degree of autonomy enjoyed by German universities (and how great this is may readily be learned from *Minerva*, vol. ii., or from Baumgart's *Ertheilung der Doctorwürde*), there is yet a refreshing absence of the feeling which among us so often passes current for exalted college patriotism, but is really in many cases a patriotism with blinders on.

If the whole work under review may not unworthily be called a *tour de force*, in a particularly high degree is this true of Paulsen's contribution, which is without doubt the best account of the growth, and the best characterization of the nature, of the German universities existing in a reasonable compass. In clearness and precision the superior of this little classic would be hard to find, in whatever language one might seek; it is worth reading as a masterpiece of German prose. To the American reader it will doubtless be the most valuable part of the whole work, appealing as it does to everyone interested in the higher education; while the limitation of field which specialization has of necessity brought about will prevent in most cases a full appreciation of the *Spezialberichte* which com-

pose the second part of the work. For this reason the present article will concern itself almost exclusively with the portion contributed by Paulsen.

I

The manifold varieties of existing universities and colleges go back to three main types: the English, the French, and the German.

The English type, in accordance with the extreme conservatism exhibited by so many things English, is the oldest; the university, a congeries of semi-independent colleges established on an ecclesiastical basis, and mistresses of very considerable wealth, manages its affairs in practical freedom from the intervention of the government. The whole number of graduates (at least of the masters) of Oxford or Cambridge still forms the ultimate governing body. The mode of life and the academic costume are still largely mediæval, the methods of instruction are hardly less so; there is a scheme, more or less rigidly fixed, of study, to prepare for examinations at fixed periods. Of independent scientific investigation proportionately little account is taken; the university professor sinks in practical importance beside the college tutor; the subjects mainly taught are still those of the mediæval *facultas artium*, the degrees mostly given are still bachelor and master of arts. For the learned professions, except the church, scanty provision is made; the future barrister or physician looks to establishments entirely unconnected with the university for his professional training. The mode of living and the regulation of the students' conduct are still made the object of anxious legislation. The scale of living is luxurious and expensive, the numbers are practically limited. The university exists in the main for the gentleman.

The furthest remove from the ancient type is found in France. From the time of the Napoleonic Empire the Université de France has been not unlike the University of the State of New York: it is the sum total of the educational system of the state, from the primary to the advanced professional school.

The latter schools, as *Facultés de droit, de médecine, des sciences, des lettres*, exist as separate entities, and in different towns; only one city, Paris, contains all the faculties. The professors and other teachers are officials of state, appointed and controlled by the central government, which also prescribes in detail the courses and methods of instruction. The faculty of theology is not represented at all in these state institutions; in France, as in most Roman Catholic countries, the church has never loosened her exclusive hold on the seminaries. Here too, as in England, original scientific investigation enters little, if at all, into the official purpose of the Facultés, being in France rather the province of the academy.

The German university (and this is true in varying degrees of the universities of Austria, Switzerland, Scandinavia, the Netherlands, and Russia) holds the middle ground between the French and the English type. It is a state institution like the French, the instructors holding state appointments, and like the French Facultés it trains for the learned professions, including the profession of teaching in the schools which are under government supervision; but it has preserved many features of the ancient corporative organization and much of the autonomy characteristic of the English universities, and (in its faculty of philosophy) it offers like these a general literary and scientific training, though its methods of instruction are very different, and this training is by no means its only aim. In its organization as a whole for purposes of instruction the German university is actually the most faithful to the mediæval type. Here are still the four traditional faculties (though subdivided in a few universities), and they are still as such the active factors in instruction, the college tutor, as he exists in England, having hardly a counterpart in Germany. But the most prominent feature of the German university is precisely that wherein it least resembles either the English or the French, and by which it marks the furthest advance from mediæval conditions and aims: its character as at once the workshop and the training school of scientific investigation. It satisfies to the fullest extent the test so well set up by Pro-

fessor von Holst (in the address printed in the number of this REVIEW for February, 1893) as the right one by which to estimate the claims of a university; it teaches how additions are made to the treasury of human knowledge; and it is a matter of course that the German who wishes to learn this betakes himself to the university. "According to the German conception the university professor is both teacher and investigator; and he is the latter in the higher degree, so that we must say: in Germany the scientific investigators are at the same time the teachers of the academic youth. . . " As a consequence, in Germany the progress of science in all its subdivisions is identified with university work, and the number of great investigators unconnected with any university is relatively small; and an account of the advance of science turns out to be mainly an account of university work. How different the case in England—except in the fields of philology and mathematics—and in France! How many noted English investigators are inconceivable as professors at Oxford or Cambridge! The reverse of the picture is less satisfactory, and Paulsen does not fail to show it. This identification of investigation with the universities brings about "an unmistakable tendency to literary overproduction, to the formation of schools and sects, to the disparagement of outsiders. . . "

In the earlier part of this century the universities were the real focus of German national life—a position which it is no longer possible or even desirable that they should continue to hold as their exclusive right. Since 1871 the political conditions of German existence are completely changed, and the professions are thrown open to the whole people alike. But the universities of Germany are very unlikely to sink to a subordinate position; in particular, the constant circulation of students and of professors from university to university forms too important a bond between North and South, and East and West, for the Germans to cast it off even if they would.

It is most interesting to follow the development of European universities, but it is not always an easy task. Italy, France, and England preceded Germany in this development, whose

beginning coincides with the turning point of the Middle Ages. The new intellectual world which then arose, looking forward as the intellectual world of the earlier Middle Ages had looked only to the past, set for itself the task of permeating with human reason the vast body of doctrines which it had inherited, and to preserve which intact had been the endeavor of past centuries. It developed the university as its organ—in Italy the "city universities," notably Bologna, in France the "chancellor university" of Paris, the first great university of western Europe. On the model of Paris, ready to hand, were avowedly constructed the first German universities, Prague in 1348, Vienna in 1365—both these in the extreme east of Germany, because the neighborhood of Paris to the west made the need less keenly felt there. Then follow Heidelberg, Cologne, and Erfurt, still in the fourteenth century; and early in the fifteenth Leipsic and Rostock. Of these seven, five still survive. A second epoch begins at the middle of the fifteenth century, with the beginning of the humanistic movement in Germany, and before the Reformation nine more universities were opened. The oldest name for the mediæval university was *studium generale; generale*, because it professed to serve all Christendom, and its degrees were recognized no less extensively. The name *universitas* denoted originally the political corporation of masters and scholars (as perpetuated for example in the "Convocation" of Oxford): *universitas magistrorum et scolarium Parisiis existentium*, *universitas studii Pragensis;* but it gradually displaced the older title for the institution itself. Down to the time of the Reformation the ultimate authority for the establishment of a university came from the Pope, though the German Emperor's concurrence was obtained, and grew in importance, by the side of the papal authorization. The internal organization of a university in the fifteenth century reminds us very little of the German university of to-day; in perusing provisions for a common life and the regulation of the students one might fancy himself reading the rules of an English or American college, the more so as the rules were evidently made for youth of fifteen to twenty years

of age. The number of lecturers and instructors, even for a large university, was strangely small: fourteen or fifteen at most for the faculties of theology, law, and medicine together, twenty or thirty for the faculty of arts. Space is lacking here for even a summary of Paulsen's admirable account of the subjects and methods of instruction of this period.

The rapid spread of *Humanismus* between 1500 and 1520, and of the principles of the Reformation after 1520, ushered in a new period for the universities of Germany. Under the influence chiefly of Erasmus and Reuchlin, two changes of the greatest moment were carried through by 1520: the substitution of classical for ecclesiastical Latin, and the introduction of the study of Greek. The spread of the Reformation at first threatened the entire destruction of the universities, but in the person of Melanchthon, for forty-two years (from 1518 to 1560) professor at Wittenberg, a Moses arose to lead them out of Egypt.

The three and three-quarter centuries from 1520 to our day may, for the history of the German universities, be divided into three periods:

I. Down to the end of the seventeenth century the universities newly founded are in each case dependent upon the established religion of the state which founded them, or at all events closely connected with it, while the universities existing from earlier times are remodeled on similar principles. The first Protestant foundation after the Reformation was Marburg (1527), the first Roman Catholic Dillingen (1549), and nine more of each faith were founded before 1690, though the Roman Catholic foundations were not all complete universities. On the whole the creations of this period have not shown the vitality of the older universities, as of the Protestant only five remain, of the Catholic only three; their influence was much more purely local than that of their older sisters, owing to the comparative smallness of the means bestowed upon them, and to the anxious care with which their confessional character was watched. The forms of organization show but little change from earlier times, but the baccalaureate degree falls into

disuse in the sixteenth century, and the master's degree is replaced, in the three "higher" faculties, by the doctorate, while both degrees were given, often together, in the faculty of arts. As in previous centuries, the faculty of theology is still the most important. But the influence and importance of all were steadily declining, and toward the end of the seventeenth century the universities were at their lowest ebb.

II. The tide began to turn with the foundation of the university of Halle in 1694. The foundation of Breslau in 1720, and of Göttingen in 1737, gave new strength to the awakening cause. With the growth of Brandenburg and the Prussian state, that of its pet university, Halle, was most closely connected, and the triumvirate of Thomasius, Francke, and Wolff assured to this school the position of the most influential university in Germany. Thomasius and Francke had been forced to leave Leipsic, at this time rigidly orthodox, owing to their liberal opinions. Wolff, driven from Halle under Frederick William I., was recalled with the highest honors by Frederick the Great, and his return marks the beginning of a new epoch. His philosophical system found acceptance in all the universities of Germany; and Paulsen well shows this to be one of the chief causes of the great difference between the German and the English universities, the latter standing firm on their ancient basis of denominationalism, while the German university no longer seeks to be chiefly an *ancilla theologiæ*. In the second half of the eighteenth century Göttingen, coming forward as the champion of the new humanism, fairly outstrips Halle in importance. The contrast between the universities in 1700 and in 1800 is thus summed up by Paulsen: 1. Scholastic philosophy has been displaced by independent and rational philosophy, which knows no authority; 2. The old imitative study of the classics has been replaced by the study of ancient civilization, as a means of general human culture; 3. German has supplanted Latin as the medium of instruction; 4. The principle of freedom in investigation and in teaching has prevailed; 5. The disputation has been given up, the use

of text-books largely abandoned, and the seminar has become a permanent feature.

III. The new period which begins at the opening of the nineteenth century is, like its predecessor, marked by new foundations—Berlin in 1809, Bonn in 1818—and also by the regeneration of Breslau in 1811, and by the transfer to Munich, in 1826, of the university previously existing at Landshut and still earlier at Ingolstadt. The local and confessional character is now completely thrown off, as it had been indeed in effect, if not in theory, by the states themselves. The philosophical faculty becomes the most prominent—if not in each university, still as a whole throughout the totality of the universities. The new philosophy, as exemplified in Kant, Fichte, Schelling, Hegel; the regeneration of philology, brought about by Wolff, W. von Humboldt, Niebuhr, Hermann, Grimm, Bopp; the rapid progress of mathematics and natural science under the leadership of Gauss, Weber, Liebig, Joh. Müller—all these gave to the German universities the commanding position which they hold in our own times. Of the greatest significance is the striking increase in the number of professorships, which has nearly trebled in the course of a century. Berlin, beginning in 1809 with twelve "ordinary" professors, has now fifty-three. In the faculties of theology, law, and medicine the theoretical philosophical tendency has given place, more or less completely, to historical and experimental methods. The outer form of the university is in the main unchanged, but of the mediæval control of the students little, and of the community life nothing (except a very little at Tübingen), remains. A change of great moment has taken place in the relations between the faculties, in that the faculty of philosophy is no longer, to any degree whatever, a stepping-stone to the other three, this position being now really filled by the gymnasia; it is a *Fachschule* not less than the other faculties, while at the same time it is much more. It trains men for the office of teaching in the gymnasia, and to this very end it seeks to make them independent scholars, as the prime condition of their fitness to prepare youth for the training which they in their

turn are to receive at the university. It may truly be said of many gymnasial professors that the spirit of scientific research is as strong in them as in the university professors, though their opportunities of research are so much more limited.

Most interesting is Paulsen's chapter on the German university in its relation to the state, to religion, and to society at large.

While the universities are now state institutions, not all of them have been such since their inception. The older ones were made practically independent at the time of their foundation; in fact, as the English universities are now in point of government, so were the German universities before the Reformation. The growth of the rulers' power in Germany, especially the addition of spiritual to temporal power which followed the Reformation, enabled them to lay hold of ever more and more privileges connected with the universities. We can trace accordingly the gradual appropriation of this control until the completion of the process in the eighteenth century, and the absorption of the universities into the general system of education under state supervision in the nineteenth. And yet with all this state control, from which Oxford and Cambridge have remained free, the universities of Germany are in most respects freer by far than these. They are subordinated directly to the Minister of Education, who has a resident representative at each. The government *appoints* the professors, it is true, but in practice the *choice* is commonly made by the faculty concerned or by the university senate. The representative of the minister, generally called curator, has to see that the professors lecture, conduct the seminars, etc.; but there are no courses laid down by the government or by him, and every professor may lecture practically on what subjects, and in what way, he chooses. In no country, probably, is the professor so untrammeled. It is a curious fact that as state control over the universities as a whole has increased, the freedom of the professors has also increased; in the gymnasia, on the contrary, it has decreased. Government interference with the What

and the How of university instruction, except of course in certain political respects, has long since ceased.

Concerning the relations of the university to religion, it may truly be said that down to the seventeenth century the universities were ecclesiastical institutions; in the eighteenth century the bond between university and church becomes loosened, in the nineteenth it is cast off. But how is it with the faculties of theology? The Roman Catholic Church, in possession of an authority over its members which is entirely foreign to any Protestant body, has succeeded in keeping in its own hands the training of its clergy, subject to only a comparatively slight state control, so that the faculties of Roman Catholic theology are in fact of much less practical importance for the training of priests than the diocesan *Priesterseminare*, and the candidates for ordination would probably in most cases not attend the universities at all if it were not for the law compelling them to do so. The Protestant churches of Germany, on the other hand, are precluded by their very doctrines from seeking such a control, though they too have institutions to supplement the theological training given at the universities, but of less relative importance. In the case, however, of appointments to the faculty of theology of either confession, an understanding is reached with the church authorities. If a professor of Roman Catholic theology leaves the paths which his bishop regards as lawful, the latter can easily prevent the Roman Catholic students from attending his lectures; but of course no such power lies with the authorities of the Protestant churches.

The relations of the university to the community are treated of by Paulsen under three heads: (1) With regard to the task to be fulfilled by the university in the community, he shows how to the three "learned" professions of the Church, the law, and medicine, each having its proper feeder in a faculty of the university, has been added a fourth, that of teaching in the government schools, to supply which the faculty of philosophy is now called upon; how the development of the more strictly technical professions, such as mechanical, civil, and mining

engineering, industrial chemistry, etc., has called into existence the polytechnic schools; and how the varying predominance of this or that faculty in different periods corresponds to the change in relative importance of the professions which they serve—in the sixteenth century the faculty of theology holding the highest place, in the seventeenth the legal, in the following centuries the philosophical faculty—while the growth in importance of the medical faculty keeps pace with the increase in national wealth and in comfort of living. (2) The question of the position held in the community by the representatives of academic culture gives occasion for a brief characterization of the academically trained class which has gradually been formed, embracing the clergy, higher officials, teachers in the higher schools, physicians, technical scientists, and architects; also military and naval officers, of whom a considerable proportion (and a very large proportion of the "Reserve officers") have attended the university. (3) The representation of all classes of society is far more extensive than in England, or even than in republican France. Yet even in Germany the humbler classes of artisans, peasants, etc., are but scantily represented. The tables of statistics given by Conrad bear out these statements in detail.

To the American reader the most interesting part of Paulsen's contribution will probably be his third and fourth chapters: On university teachers and teaching, and On university students and study. It is just here, particularly on the former subject, that American educators have learned most from Germany, and here also (in the writer's opinion at least) that they have still most to learn.

The classification into ordinary and extraordinary professors, and *Privatdozenten*, is too familiar to need touching upon here. Only the *Privatdozenten*, so unlike any class of university teachers elsewhere, seem to call for some notice. Their existence is in fact a heritage from the Middle Ages, a relic of the corporate constitution of the earlier universities. The graduated *magister* had the right, and in the faculty of arts often the duty, of giving instruction. A distinction gradually

grew up between the higher and the lower *magistri*. The higher were those who held a position in the *collegium* and benefices of one or another sort, in return for which they were bound to lecture gratis. The lower masters had no such privileges or obligations, but lectured for fees. With the gradual establishment, after the Reformation, of regularly paid professorships in the faculties of arts—hitherto such had existed only in the other faculties—the obligation of teaching put upon the masters was gradually abolished; and the difference between the higher and the lower *magistri* became greater, those who aspired to becoming *magistri legentes* having thenceforth to exhibit much greater proficiency than the ordinary masters. This custom lives on in the requirement of a *Habilitationsschrift* from every would-be *Privatdozent*, and in the disputations obligatory upon him, which are by no means always cut-and-dried affairs.

The Germans justly regard the *Privatdozententum* as one of the most valuable adjuncts to their university system. The *Privatdozent* is the free rival of the professors in whose fields he lectures. He is not bound to leave any particular subjects for them to treat, or to handle any subject in a way agreeable to them. He is an academic free-lance, and it not infrequently happens that his lance is turned with good effect against his seniors in his own field. He stands nearer the student than does the professor, and some of the most fruitful associations for both sides are the friendly relations entered into between a *Privatdozent* and a group of older students. The constant competition of these young and ambitious men acts most beneficially upon the professors. The students are very quick to take advantage of a particularly good course "read" by a *Privatdozent*, which is made easier for them by the peculiar custom known as *Hospitieren;* and for them the advantage of hearing the same or nearly the same subject treated from different points of view is very great. Nor is the gain less for the scientific growth of the young lecturer himself. He has to deliver only such lectures as he may choose to announce. The government pays him nothing, and claims no services from

him, simply giving him permission to lecture; and he may consequently shape his scientific career to suit his own ends. A wider contrast could hardly exist than that between the *Privatdozent* and the American tutor or instructor, who often hardly dares call his soul his own, and to whom an infringement upon the monopoly of learning possessed by his superior officer may even involve a very bitter experience.

The methods of instruction in the German university are two: lectures, and exercises of various sorts, whether in seminar or laboratory. Recitations, in the American sense, are unknown, the nearest approach to them being the elementary courses in languages not previously studied, as Sanskrit, Arabic, or Persian. And even here the method followed generally varies greatly from that of our recitation, the instructor rarely or never giving out lessons, and using most of the time for reading and interpretation.

Perhaps no point in the German education has been more argued upon in America than the lecture-system. In general, the American mind seems opposed to it; it seems such a long way around, while the American mind likes short cuts. And in Germany as well many voices have been raised against this "mediæval practice, useless since the invention of printing." But there is still much reason in the contention of its defenders that, were it abolished, nothing yet proposed could fill its place. A course of lectures, according to the German idea, should give in a continuous series the lecturer's personal views, gained by investigation at first hand, of the totality of some branch of science, of its main problems and leading ideas, of its most important content and the method of its acquisition, of its relations to science as a whole. Now all this might be put in a book; but by comparison with personal communication a book is a lifeless thing. The personal element in the lecture system is of paramount importance. The student sees before him one who has himself explored in the wilderness. He finds himself led on little by little into new fields. At every step he finds a reason given for taking this path, and not the other. The text-book, be it never so complete, is silent on

all questions that have arisen since it was printed; but the lecturer can and should keep abreast of the very latest researches. Few who have spent any considerable time in a German university—supposing them to have become really familiar with the language, which unfortunately cannot by any means be said of all Americans who study in Germany—can fail to have brought away with them the vivid recollection of one or more lecturers whose personal example, presented anew day after day, had inspired them to their best efforts. Not many Americans are likely to have sat under A. von Gutschmid, who was for many years professor of history at Tübingen; but none of these will ever forget the extraordinary magnetism of the man, and the enthusiasm for work which he imparted to his students. Under the spell of his eloquence, which was truly a rhetorical eloquence, one often forgot to take notes, as indeed it was sometimes impossible to do from the rapidity with which he spoke; yet one always brought away from each lecture hints as to method, and examples, of the greatest and most lasting value. And who, with a recollection of G. Curtius, of Ritschl, of Zeller, would exchange the impulse and benefit gotten from those masterly lectures for a shelf full of text-books?

The custom of taking notes, as it is practiced in a German university, forms in itself a mental training not to be lightly despised. Very few German lecturers dictate; those who do so generally confine their dictation to the statement of certain important principles, etc., and as nearly all speak with great rapidity it requires some practice to get a good set of notes, and only the most skillful of stenographers could make a *verbatim* report. Under these circumstances the student has to reconstruct what he hears as he writes it down; the degree of success in this varies of course greatly with different lecturers and with different hearers. The mental exercise thus involved when one hears four or five lectures a day is of no mean order; indeed, one's power of rapidly seizing and noting the main points of a discourse is immensely increased thereby. The German student, while not so eloquent a "speechifier" as his

American brother, is in general a much more skillful talker in a scientific discussion, as the writer of this notice has often had occasion to observe; his ready command of facts is far greater, and he is a closer reasoner—qualities which may in part be explained by his lecture-room training.

As for the exercises, the most important are those provided by the seminars. Here the American educator has found something more to his liking, and fortunately for our universities the institution has been carefully transplanted, and has taken firm root. But the writer is convinced that the seminar develops its full usefulness only when it supplements thorough lecture courses, which state in scientific fullness and exactness the principles, whose practical working is to be exemplified in the seminar. For instance, how can a seminar in classical philology do its legitimate work exclusively and completely, when its members have no good theoretical knowledge of the scientific principles of philology as a whole?

The vital principle of the modern German universities is the union of *Lehrfreiheit* and *Lernfreiheit:* of freedom in teaching and freedom in learning. It is this which makes them the most modern in scientific spirit of all institutions of learning. The professor is what his name implies: he professes his personal views and convictions, in all sincerity. This is evidently possible in natural science, in history, medicine, political science, philology. But how is it so in theology, or in philosophy, which so often touches theology? In the faculties of Roman Catholic theology, it must be at once admitted, the *Lehrfreiheit* has but little place, and the professors may not depart from accepted dogma; yet they may, so far as any government or university interference is concerned—if they are brought back to the path of dogma, it is by the bishop. With regard to Protestant theology, there has been a pretty constant conflict between the university lecturers and the church authorities, which the state, as controlling both parties, has often had to appease; and this it has done, leaning sometimes in the one direction, sometimes in the other. As for the *Lehrfreiheit* in philosophy, bitter reproaches have been

and still are made against the universities, naturally by the same individuals who protest against freedom of theological teaching, that they foster an atheistic philosophy, to the subversion of all true religion and virtue. Fortunately for the science of philosophy, there is no prospect of successful interference with her *Lehrfreiheit*. "A philosophy under control," says Paulsen with perfect truth, "is a nonentity, and can have no influence. Philosophy is nothing else than the attempt, renewed from time to time, to express the nature and the meaning of reality, as it presents itself to the unprejudiced and contemplative human spirit." A curtailment of the *Lehrfreiheit* is permissible only in respect to the form in which instruction is given; and this is in Paulsen's opinion quite desirable. It results of itself, however, if the teacher keep ever before his eyes the true purpose of his teaching: to inspire his students to the earnest investigation of truth.

Of the students attending the German universities Paulsen writes at considerable length. *A propos* of the requirements for admission, he is evidently in favor of opening the study of medicine, as well as that of mathematics, natural science, and modern languages, to the graduates of the *Realschulen*. He points out that the average age of the students has slowly increased, until now the *Studienjahre* are essentially the years from twenty to twenty-five, and that in general the triennium no longer suffices to complete the course—indeed, in Bavaria four years are demanded, in all faculties, as a prerequisite to the examination for the degree or to the state examination, and everywhere at least four and a half for the medical examinations.

It is interesting to read Paulsen's remarks on the life of the student, and the possibility of providing him with accommodations which would be in a measure a restoration of the community-life once existent in German universities. It is plain that such attempts, which have been occasionally proposed, would meet with scant success. It is one of the most curious contrasts between the German and the Anglo-American student that the former loathes beyond expression the living

under surveillance which the latter accepts willingly enough if he have with it the constant society of his fellows and a considerable degree of coziness and comfort. An equally great obstacle to such a restoration would be the migratoriness of the students. Professor Conrad, while unable to give exact statistics, declares that only a small percentage of students pursue their studies exclusively at one university. It would be a poor exchange indeed if the great benefits which this custom of moving about brings to the student were sacrificed to the desire to house him comfortably under one roof with some scores of his fellow-students. As for the purpose of university study, it is well expressed by Paulsen in these words: "The object of study is to learn to think scientifically, to acquire the ability to comprehend and test scientific investigations, and to conduct them; and in the second place, to acquire the ability to solve practical problems on the basis of scientific insight." He who should be content with mere learning would be no true German student. The necessary corollary of this ideal is the *Lernfreiheit*. "Whoever is acquainted with the German universities and with youth, cannot doubt that all attempts to foster devotion to study by more or less mild regulations would be both useless and harmful: useless, because only the appearance [of diligence] not the thing itself, can be thus extorted, and harmful, because such attempts weaken the spirit of independence and of responsibility." Such attempts would also tend inevitably to destroy the pleasant relations (pleasanter in Germany than in any other country) between professor and student. The unfavorable results of legislative interference with the freedom of the student are to be seen only too plainly in Russia.

Of the way in which the German student avails himself of the means of instruction offered him there does not remain space here to treat. A word concerning the examinations may, however, not be out of place. The universities hold only examinations for degrees, except that in the faculty of medicine all students have to pass, generally after two years' study, examinations on anatomy, physiology, and natural

science. The university degrees give *in no case* the right to practice one's profession, but are merely a recommendation or an ornament. Their only purely practical value is for the intending lecturer at a university, who must have taken his university degree. The University of Leipsic has gone so far as to refuse to examine anyone for the degree of M. D. who has not already passed his state examination. The state examinations form the only door to the four professions recognized in Germany as "learned"—a condition of affairs which has been brought about almost entirely in the present century. It is just in regard to examinations that another great difference between the German and the English or American student shows itself. The latter generally works with his eyes fixed on the examination; it is one of the greatest difficulties which a teacher of advanced university classes has to encounter in this country, to induce his students to read extensively in collateral subjects, if there is no likelihood of their being examined thereon. The German student concerns himself much less about his coming examination; he sees the futility of "cramming" for it, and not infrequently defers the selection of his "minor subjects" (of course this applies only to the faculty of philosophy) until he makes application for examination.

"With all this freedom granted professors and students in Germany," one may not unreasonably ask, "and with the sharp divisions between the different faculties, how can any university possess a real unity?" Yet such a unity exists, and it is a very real and visible unity. The change on the part of students from one faculty to another is not uncommon; Conrad estimates that in 1886–88 an average of over eight per cent. of the students in the Prussian universities had thus changed over. And even where no formal change is made, it is not at all unusual to take lectures outside of one's proper faculty. In particular, the courses in philosophy are largely attended by theological, legal, and medical students. The unified university represents the unity of science; the university is greater than the sum of all the faculties. In France, where

the opposite tendency has prevailed, the cause of higher education has distinctly suffered, so much so that it is now seriously proposed to restore some of the ancient universities out of the scattered faculties. One-half of all the students attending the various Facultés in France are at Paris, where all the faculties are represented except theology. The absence of a faculty of theology from the university is common to most, perhaps all, Roman Catholic countries; and in Germany this is the part least in touch with the university as a whole. The faculty of Evangelical theology, whose constant aim it is to reconcile religious needs and doctrines with scientific truth, fits into the scheme much more satisfactorily, and it is significant that of the twenty-one universities of Germany (including Münster) seventeen have faculties of Evangelical theology. The mere juxtaposition of workers in different scientific fields helps to keep them in constant touch with each other. In the smaller universities (which in Germany means also in the smaller towns) the intercourse between men of different faculties is especially lively and fruitful. Nor is it very rare to find a professor transferring his work from one faculty to another, conspicuous examples of which are Lotze, Helmholtz, Mommsen, Zeller. And this unity of the individual university is not all. There is another and a far better unity: the complete reciprocity of all the German-speaking universities. Students pass from one to the other with the greatest freedom, many visiting three or four before finishing their studies. The Germans (to their everlasting credit be it said) have saved themselves from being smothered under an educational "crazy quilt."

To Páulsen's characterization of the universities of Germany a fitting close is formed by the following words quoted by him from Savigny: their real value is not in "perfect learning of their teachers, nor in the ever-growing learning of their students; if we should name this as their distinction, a mirror would often need to be held before us to our shame. It is rather this: in them is given a scheme, wherein every important educational talent finds its development, and every

lively susceptibility of the student its satisfaction; through which every advance of science finds easy and rapid entrance; by which is made easy a recognition of the higher calling of exceptional men, and in which even to the poorer life of limited natures a higher sense of existence is imparted. Of the possession of such a scheme we may well be proud; and he who knows our universities will agree with me that in this commendation there is literal truth, and no exaggeration."

II

Professor J. Conrad of Halle, author of the well-known *German Universities for the Last Fifty Years*, has given in fifty-four pages a statistical account of the universities of Germany in recent years. It will be sufficient to quote here the headings under which his summary is presented, which are these: General statement; The separate faculties; Relations between the faculties; Previous training of German students; Foreign students in Germany; Length of study and stay at one university; Military relations of students; Age of students; Profession and rank in life of students' parents; Religious affiliations of students; Instructors; Bestowal of degrees; Finances of German universities; Cost of study; Benefices. Without reckoning students of theology, the ratio of university students to the population of the German Empire is shown to be about 48 in 1000—a ratio less than that which prevails in Austria-Hungary, Italy, Belgium, Switzerland, and Norway and Sweden, though comparisons are not always easy or safe, owing to differences in the institutions of various countries. The three universities of Berlin, Munich, and Leipsic, with (in round numbers) 5000, 3400, and 3300 students respectively, contain 41 per cent. of the whole number of students. The proportion of lecturers to students is large: at present there is one instructor to every 12.2 students. More than half the entire number of instructors belong to the faculties of philosophy, where the proportion is one instructor to 6 students, while in the faculties of Evangelical theology it is 1 to 25. The proportion of instructors to students is greatest

in the smaller universities. The number of degrees given is, according to American ideas, curiously small, as only about one student in ten takes his degree—a state of affairs easily explained by the fact mentioned above that the degree confers no privileges. The proportion of students who take degrees is largest in the faculty of medicine, smallest in that of theology.

III

The *Fachberichte* which make up the second division of Lexis' work are furnished by seventy scholars. The names which will command widest attention outside of the circles of specialists (though distinctions are here invidious) are doubtless to be found in the lists of the faculties of philosophy and of pure science, *e. g.*, W. Wundt (physiological and experimental psychology), U. von Wilamowitz-Moellendorff (classical philology), K. Brugmann (comparative grammar and linguistics), H. Grimm (art-history), F. Klein (mathematics), H. Wagner (geography); and from the faculties of medicine R. Virchow (pathological anatomy) and H. von Ziemssen (practice of medicine). The editor disavows in his preface the intention of presenting a history of the sciences in these special accounts, claiming only that they attempt to show the part which the German universities have borne in the advancement of science. Yet, thanks to the proud position which these universities hold as the representatives of the active scientific spirit, we have in these accounts at least a concise sketch of the history of the sciences in Germany. Besides this some of them give descriptions of existing arrangements for the furtherance of study and investigation. The reader who seeks to form an adequate conception of the German university would do well to read carefully some of these accounts, as an exemplification in detail of the practical working of the system described in its entirety by Paulsen. For example, Wundt gives a full description of the psychological laboratories at Leipsic, and of the methods of instruction there pursued. It is interesting to find him noting that among the first partici-

pants in the work of this psychological institute were several Americans, and that the United States still furnish the largest quota of the non-German students who attend it. An omission which seems very strange, in view of the great attention paid to the science and art of teaching in Germany, is the lack of a special account of pedagogy as taught in the universities; nor is the omission made good, as it might well have been, in the *Berichte* on philosophy and psychology.

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One cannot wish too earnestly that this great work may become well known to English and American readers. We need not seek to do all things as the German universities do them, and we could not imitate them completely if we would, but there is still much worth transplanting, and likely enough to flourish and bear good fruit in our soil. The writer of this notice ventures to hope that for many years yet American students may continue to get at least a part of their training in Germany, and keep alive the intellectual sympathy which secures for American visitors so friendly a reception in the German universities.

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Other articles on higher education in Germany have appeared in the EDUCATIONAL REVIEW as follows: The German Emperor's Address to the commission on school reform, February, 1891; Results of the Prussian commission on school reform, by Professor Henry Wood, March, 1891; Contemporary educational thought in Prussia, by Friedrich Kirchner, May, 1891; The present condition of the German universities, by Professor M. M. Curtis, June, 1891; Impressions of German schools, by Mr. John T. Prince, October, 1891; The educated proletariat in Germany, November, 1891; Contemporary educational thought in Germany, by Ernst von Sallwürk, April, 1893.

## II

## GOVERNMENTAL MAPS IN SCHOOLS

At the conference on geography, held in Chicago, December 28, 29, and 30, 1892—one of several conferences held at the request of the Committee of Ten of the National Educational Association—the undersigned were appointed a committee to prepare a selected list of topographical maps published by our various governmental bureaus, making special mention of such sheets as might best illustrate the physical features of our country. It was the desire of the conference that the list thus prepared should be published and widely distributed among school superintendents and teachers, and that our high schools should then as far as possible secure the specified maps, together with the map of the district in which the school is situated (if such a map is yet published), and introduce them in the teaching of geography.

In accordance with these instructions, the committee has examined the maps published by the United States Geological Survey, the United States Coast and Geodetic Survey, the Engineer Corps of the United States Army (the "Lake Survey"), the Mississippi River Commission, and the Missouri River Commission. For the sake of completeness, attention was given also to the topographical maps of certain States, to the daily weather maps issued by the United States Weather Bureau, and to the Pilot Charts of the North Atlantic, published by the United States Hydrographic Office.

The list of selected maps thus prepared will be published at an early date in pamphlet form by the publishers of the EDUCATIONAL REVIEW. It will contain the names of over two hundred sheets, arranged under sixty-seven headings. The following abstract will sufficiently indicate its character. A general account is first given of the maps published by each

of the several bureaus named above; including mention of the style of the maps, their scale, the index maps, cost of single sheets, and address of officers to whom application should be made for them. Following these general accounts come specific lists of those sheets which in the judgment of the committee will be found of the most immediate service in geographical teaching. For example, among the topographical sheets selected from those prepared by the Geological Survey, there are illustrations of plains, plateaus, volcanoes, mountains of various patterns, valleys, shore lines, and so on. The charts selected from those published by the Coast Survey represent the fiords of Maine, the sand bars of the Carolina coast, the delta of the Mississippi, and other localities. Accompanying each chart or map is a brief text, explanatory of the features there exhibited. The islands fringing the coast of Maine are explained as half-submerged hills; the estuary of the Thames below Norwich, Conn., is described as a partly submerged valley; the sand-bar capes of our southern coast are ascribed to the action of waves and currents; the narrow transverse valleys, or water-gaps, cut in the linear ridges of the Appalachians, as on the Harrisburg (Pa.) sheet, are explained in their proper relation to the inner longitudinal valleys which they drain; the escarpments of the New Mexican plateaus are introduced as examples of retreating cliffs; the drift hills of southern Wisconsin are instanced as examples of glacial topography; and so on. It is believed that the specific illustration thus afforded of many geographical forms will prove serviceable in giving reality and clearness of understanding to the physical features characteristic of different parts of our country.

It is important to announce here, as well as in the report itself, that the cost of those maps for which some charge is made is very moderate. For example, the invaluable map of the alluvial plain of the Mississippi River, in eight large sheets, is sold for forty cents; or for ten cents a sheet, if the whole set is not purchased. The large scale sheets of the Mississippi, minutely portraying its meanders, its cut-offs, and its ox-bow lakes, are priced at twenty cents a sheet. The illustrated

catalogue of the charts published by the Coast Survey may be had *gratis* on application; while the large scale charts of the different parts of the coast are priced on an average at fifty cents each. Still more available are the topographical sheets issued by the Geological Survey: these will be furnished free of charge to teachers who specify the sheets that they wish and who satisfy the Director of the Survey that the maps are for actual use in teaching. If the demand for these sheets is large and the existing editions are exhausted, efforts will be made to enlarge the future editions so as to satisfy the educational demand, when the interest and the need of teachers are clearly made known.

It was expected, when the motion under which our report has been prepared was introduced at the geographical conference, that the cost of even a moderate number of selected sheets might amount to a considerable sum, which few schools could afford. The committee is therefore especially gratified to be able to announce, as above, that so many of the most useful maps can be had either without cost, or at a very low cost; and that a considerable equipment of this sort is consequently within the reach of every enterprising high school. All the officers in charge of the various bureaus by which the maps are published have expressed themselves ready to cooperate with the action of the conference in this direction, as far as their authority will allow; it being generally recognized that the need of the maps in the schools for educational purposes constitutes a claim which the bureaus should meet, as far as possible. It is therefore manifestly advisable that all applications should be made in due form, stating specifically the names or numbers of the desired maps and the use to which they will be put; and it may be well that the principals of schools should have their applications certified to by their city or county superintendent.

It is not necessary that schools should provide themselves immediately with all the maps named in the list. Alternative maps are often mentioned under a single heading. It is, however, hoped that experiment will at once be made with a

considerable number of maps in many schools. Beginning with such maps as may attract the interest of the teacher for one reason or another, the collection can be enlarged from year to year, until it becomes an effective and indispensable aid in geographical teaching. When the school appropriations do not suffice to buy those maps that are to be had by purchase only, the assistance of contributions from persons especially interested in the development of their local schools can often be secured. Graduating classes may leave pleasant memorials of their attendance by buying certain maps for presentation to the school collection.

In making choice of maps, the brief explanatory statements under each heading may be used as guides; but it is also intended that these statements should serve to indicate the character of the rational information that an intelligent study of the maps should convey to well-trained scholars in the high schools. If some of the explanatory statements contain matter unfamiliar to the teachers, and therefore perhaps at first not easy of comprehension (as for example, the accounts of old, worn-down mountains, sections 24, 25, 26), the committee would especially urge that the maps there referred to should be procured; not only because the explanations will be found much more comprehensible when map and explanation are studied together, but also because of the fundamental importance of the rational explanation of land-forms in the study of geography.

It is believed by the committee that many maps in the list might be usefully introduced in the grammar schools, to illustrate the more elementary lessons in geography. This is especially true of the map of the school district, which (if already prepared and published) should without fail be obtained at once. A geographical excursion led by the teacher, or undertaken by a party of scholars, is greatly enlivened by the aid of such a map. Even if attempted only once or twice a year, the lessons then learned out of doors will be found of great value afterward in interpreting maps of districts beyond the scholars' indoor observation. Unfortunately, there are no topographical

maps for the greater part of our country. It is in part to emphasize the loss suffered by the teachers in the unmapped States that the accounts of the State surveys are introduced. The example set by New Jersey and Rhode Island, in the liberal distribution of home maps to their public schools, should be followed throughout the country. Local maps in other States can probably be obtained, if published, by adding a request for the sheet containing the school district, when applying to the Director of the Geological Survey for such of the topographical sheets as are selected from the list. The index maps of the other surveys will also be useful to those residing within their limits, in selecting home maps not mentioned in the report. It must often happen that these home maps are not included in our lists, and hence that no particular account of them can be prepared beforehand. In such cases, it is suggested that teachers who desire information about them should address a member of the committee, who will endeavor to return such suggestions as may be useful.

As the greater number of maps are on sheets of medium or large size, it is important that they should be carefully kept and handled, to avoid injury by creasing or tearing. When possible, each sheet should be backed with light cotton cloth. If this cannot be done, the two upper corners should be backed and small eyelets inserted, so as to prevent tearing when tacking up the sheets for study. The sheets are best kept in large folders of heavy brown paper. These should lie flat on a large table. When no storage space is available for them, they may be kept on a table that is in daily use, provided that an extra top is made for the table, under which the folders may lie out of harm's way. The maps should be exhibited to the class only when the subjects that they illustrate are under consideration. In carrying them about, they should be held by the two diagonal corners, to avoid kinking the paper. It is, however, not enough that a school should simply store away a fine series of maps. Much care should be given to their effective use, and the following suggestions are offered as an aid toward this end: On receiving a series of

maps, the teacher should examine each one to discover the various features that it illustrates. He may then enter marginal notes in his text-book at such paragraphs as treat of subjects illustrated on the maps; each map being perhaps entered at several places in the book. Before a lesson in which certain maps will thus be called for, the maps can be taken from their case and laid before the class for inspection in appropriate order. In this way the maps are not only introduced in proper connection with the text, but the labor of using them is greatly decreased; and as is well known to teachers, the usefulness of the maps will thus be proportionately increased. Much advantage comes from the repeated use of a single sheet, whereby its manifold features become familiar. It is also believed that the maps serve as more forcible illustrations if exhibited only when they bear directly on a lesson; instead of being always in sight on the wall, where they soon become stale.

As the brief explanatory notes offered with the maps are manifestly inadequate to bring out clearly all that the maps may teach, it is important, whenever possible, that the teacher should read fuller accounts of the districts represented. After the maps have thus been in use a year or more, and their various features have become familiar, the teacher may to advantage prepare brief written explanatory notes for each sheet, emphasizing such matters as seem to him most important, or as best illustrate the chapters of his text. These notes may be attached to the margin of the maps, for ready use.

Whenever a map is exhibited, the position of its area should be indicated on a general map of its State or of the whole country, by affixing a rectangle of white paper of suitable size at the proper place, or in some other simple way. The scale of the maps is so much larger than that of maps ordinarily seen in schools, that the local geographical details included on a single sheet do not suffice to indicate its proper place in the State. Even the towns and rivers included on a single sheet may afford no sufficient guide to its position in its State as a whole. It is therefore of much importance that the illustra-

tions afforded by the maps should be properly localized by reference to a map of a larger area on a smaller scale.

The extension elsewhere of the geographical features included on a map sheet should be described as fully as possible, generally by use of an ordinary wall or atlas map. For example, the ridges of Pennsylvania, Virginia, and Tennessee, exhibited minutely but in a fragmentary way on certain of the sheets named in the list, should be traced out in their general distribution on a good physical map of the United States: the glacial lakes, illustrated in sheets from Massachusetts and elsewhere, should be associated with their natural relatives in Canada, Scotland, Scandinavia; and so on.

Many of the names mentioned in the accounts of the maps are of little importance in themselves, but they serve to guide the student quickly to the examples referred to. They should become familiar by frequent reference to the localities to which they are attached, rather than by intentional memorizing of the names apart from the places. Emphasis should be given chiefly to the facts of form, to the meaning of these facts, and to their regions of occurrence. The relief of the land, so imperfectly represented on ordinary school maps, will thus be given its proper importance.

Scholars should be practiced in the art of reading maps. A general glance at a map of minute detail gives little more understanding of its full meaning than would be gained of the meaning of a printed page by running the eye over its lines. The different features of a map should be examined in due order; the best example of each feature should be selected and carefully studied. In order to insure the correct perception of the facts represented on the maps, the scholars should be encouraged to describe them in the best language they can choose, much in the manner that they would describe the actual district in traveling over it, or in viewing it from some elevated point. Not only verbal but written exercises may be thus introduced; and opportunity for much useful instruction will be found in this way.

The results that may be expected from the introduction of

the maps here described in our public schools are far-reaching. Undoubtedly the most important result will be found in the better appreciation of geographical lessons, and in the discovery of an unexpected richness of this subject. But the value of lessons from the maps will not stop here. The scholars will carry away from the schools an appreciation of the great teaching power of good maps. When they travel over the country, they will wish to travel, map in hand, so that they may see their land with a more searching eye. When they find that good maps are so few, they will demand the preparation of more; and thus from the use of such maps as we now have, the production of even better ones will follow. The committee therefore desires to close this introduction to its report by most seriously urging all teachers of geography in our high schools to procure at once as many of the maps named in the list as they can profitably use, and to begin the study and use of them immediately on their receipt. In order that the committee should have some measure of the result of their work, it is requested that the principals of schools who follow the suggestions here given should briefly inform the chairman of the committee of their action.

W. M. DAVIS,
Harvard University, Cambridge, Mass.
C. F. KING,
Dearborn Grammar School, Boston, Mass.
G. L. COLLIE,
Beloit College, Beloit, Wis.

Other articles on geography have appeared in the EDUCATIONAL REVIEW, as follows: The Brooklyn Institute geographical exhibit, by James Cruikshank, April, 1891; The teaching of geography, by Professor W. M. Davis, May and June, 1892; Text-books of geography, by J. W. Redway, February, 1893; Geography in the European universities, by Hugh R. Mill, December, 1893; The status of geography teaching, by J. W. Redway, January, 1894; Economic geography, by Professor Morris Loeb, March, 1894.

## III

## AN EXPERIMENT IN CORRECTING COMPOSITIONS

Professor George R. Carpenter put it none too strongly, complaining of the unhappy lot of the college instructor in rhetoric, when he said that he "has too frequently narrowed his interests and perhaps even debauched his intellect by confining himself for years to the incessant reading of themes merely made to order by tired, lazy, or indifferent students."[1] If this be the effect of theme-correcting on a man who deals with essays written by young men and young women from eighteen to twenty years of age, who have completed the grammar school and the high school courses, and who have passed an examination in English in order to enter college, how dreadful must be the drudgery of the teacher who corrects the compositions of mischievous boys and careless girls twelve to fourteen years of age in the grammar schools! The plight of the grammar-school teacher is worse than that of the college instructor in so far as her pupils' minds are less mature, their knowledge less extensive, and their powers of language less developed. Add to this that composition is only one of seven or eight different subjects which the grammar-school teacher is required to teach, and a layman may form a slight, but inadequate, idea of the difficulty and drudgery of that teacher's work.

Such being the case, it is surprising that so little attention has been paid by writers on methods of teaching to the matter of theme-correcting. On all hands it is admitted that a child should learn to speak and write his mother-tongue clearly and accurately. On all hands it is admitted that the correction of errors is essential to the securing of this result. Yet to the development of a systematic method that should

[1] EDUCATIONAL REVIEW, IV: 438.

interest the pupil in the work and economize the time and energy of the teacher, but slight attention has been paid. As a rule, the manuals of elementary composition do little more than supply lists of symbols,—modifications in greater or less degree of the proof-readers' marks,—by which the teacher is asked to indicate in the margin the mistakes she finds in the body of the composition. When one seeks for information in the books on methods of teaching most frequently resorted to by the teacher, the dearth of discussion and suggestion is even more remarkable. Mr. Fitch, in his *Lectures on teaching*, has not a word to say on the subject. Dr. E. E. White, in his *Elements of pedagogy*, is equally silent. So is Johnnot in his *Principles and practice of teaching*, and Page in his *Theory and practice of teaching*. Superintendent Greenwood, in his *Principles of education practically applied*, says: "It is not intended to go into any elaborate account of methods of correcting compositions. . . Minute directions for marking all errors are given in most treatises on compositions, so that I have but few suggestions to offer." He then proceeds to lay down some general directions, as that "the pupil should write a bold, legible hand," among which is one of really great value: "In all cases of doubt, the pupil, if somewhat advanced, should consult the dictionary and English grammar." I regard this suggestion, natural and commonplace as it may appear, as of really great value, because I have found it in no other book on methods written in English, and because after some years' experience in dealing with some thousands of teachers, I have not discovered one who adopted it systematically until she received the suggestion from outside.

Mr. Prince, in his *Courses of studies and methods of teaching*, treats the subject somewhat more fully. He first gives the method that has been most usual in the schools of this country. "It is well," he says, "to have each pupil, beyond the first year, provided with a language exercise book. . . Upon the left-hand page the language exercise can be written; and upon the right-hand page the same exercise, after it is corrected, can be rewritten in a correct form."

To lighten the work of the teacher, he suggests that "some corrections may be made at the time of writing, the teacher passing among the pupils and pointing out their errors; but," he adds significantly, "most of the errors will have to be corrected after the papers are collected."

The method laid down by Mr. Prince is, as has been stated, the most usual method. It embraces three steps; the writing on a theme by the pupils; the marking, by the teacher, of errors in what the pupils have written; the rewriting, by the pupils, of their compositions in such a way as to correct the errors marked by the teacher.

In practice, I have found this method open to most serious objections. The reading of compositions in order to correct errors lays an intolerable burden on the already overburdened grade teacher. In this monotonous "grind" she consumes the energy that should be devoted to the preparation and execution of class work. The drudgery for the teacher being so irksome and blighting, she is naturally led to diminish the number of compositions written, so that the pupil does not receive sufficient practice in writing: one composition a week is probably the maximum under this plan, while one every fortnight is more nearly the rule. At this rate, only those endowed with unusual powers of language ever learn to write with facility. But when the work of the teacher degenerates into mere drudgery, it is apt to become the same for the pupils. So it certainly is in this case. As the children have no facility in composition, the first writing is drudgery; as they are required to copy, after the lapse of some time, what has been corrected by the teacher, the copying process becomes more irksome even than the first writing; it is always perfunctory and generally abhorred. Since this has been the method commonly pursued in the higher grammar grades and in high schools, it is little wonder that the colleges find their students at entrance miserably deficient in the writing of English.

To escape this drudgery, teachers have suggested various modifications of this plan. One of these modifications, which may be taken as a sample of the others, is thus described by

Mr. Prince: "Let as many pupils write their exercises upon the blackboard as can be accommodated there, and call the attention of the entire class to the corrections you make in each, frequently appealing to the class for assistance. . . When some of the corrections have been made, ask the pupils to re-examine their papers and mark the errors they see, then after exchanging papers they may correct the mistakes of one another. After all this is done, the teacher, by glancing over the papers, can tell whether they may be copied into the language books as they are, or whether another recitation will be necessary to correct the papers."

While this method is a great improvement over that first described, it is defective in unnecessarily disclosing a child's errors to his classmates and thus exposing him to humiliation, in not exciting interest, in not exercising sufficiently the child's critical powers on his own work, and in not making use of the child's knowledge of grammar and related subjects. Moreever, it still calls for considerable burning of the midnight oil on the part of teachers, because the "glancing over the papers," which Mr. Prince recommends, generally means many hours of tedious reading and perfunctory use of a blue pencil or red ink.

Before venturing to suggest what seems to be a better way, it may be well to set down some rules which the experience of the best teachers has developed regarding theme-writing:

1. Anything we desire to learn—particularly when it is something we have to do—is best learned by practice on successive days. Hence it follows that in the grammar school, at least during the last two years, there should be a period, however short, devoted to composition-writing on each school day.

2. "No man or boy," as Professor Carpenter puts it, "can be made to write really well unless he writes for the purpose of expressing thought."[2] Hence, the matter of the composition should always be selected from the class-work in which the pupil is engaged—his history, his geography, his reading, his mathematics, his personal observations and experiments.

[2] EDUCATIONAL REVIEW, IV: p. 436.

3. The composition period should be devoted exclusively to the composition work. President Eliot has pointed out that that work is needlessly complicated by trying to teach the art of thinking and the art of expression in the same lesson. The thinking part should receive attention in the lesson on the subject-matter; the expression of the pupil's thoughts should form the staple of the composition lesson.

4. The doctrine of the co-ordination of studies admonishes us not only to take the subject-matter from one of the other studies, but to allow the pupils to make use of their grammars and dictionaries whenever they so desire. If, in writing, the child is at a loss for a fact, let him have free access to the book where it is to be found; if he is in doubt about a point in grammar, let him examine the text-book; if he does not know how to spell a word, let him look it up in a dictionary, and so on. The report of the Conference on English to the Committee of Ten says very wisely: "The teaching of formal grammar should be, as far as possible, incidental, and should be brought into close connection with the pupil's work in reading and composition."

5. As the acquisition of a clear and correct style of writing is largely a matter of imitation, the pupil should be taught in his reading lessons to examine the style of what he reads, and even to select and study models for imitation.

6. During the years of school life which must precede the writing of themes, the child should be very thoroughly drilled on the formation of typical sentence forms. The report of the Conference on English, alluded to above, puts this matter very strongly: "The teacher should bear in mind that the necessity of correctness in the formation of sentences and paragraphs is like the necessity of accurate addition, subtraction, multiplication, and division in mathematical work, and that composition proper,—the grouping of sentences and paragraphs,—as well as development of a central idea, should never be taught until this basis of correct sentences is attained."

But even when the utmost care has been given to these preparatory exercises, children will make many blunders in their

composition work. For the correction of errors, I have tried the following plan with most gratifying results:

The pupils of a given class are asked to write what they can on a topic selected from the class work of the preceding day. They are allowed from ten to fifteen minutes in which to write. After a few weeks of daily practice in this work, the child has no difficulty in writing in this time a composition sufficiently long for all practical purposes.

Then each pupil is asked to read silently his own composition, to discover whether each division of the subject-matter has a paragraph to itself, and whether all he has to say on that division is contained in that paragraph. If he finds his work faulty in either of these respects, he is told to correct it at once, not by making a proof-reader's marks in the margin, but by erasing and interlining, as becomes a writer of manuscript.

Then the pupils are told to read each his composition a second time, to determine (1) whether each sentence has one, and only one, central thought; (2) whether the concords between subjects and verbs, antecedents and pronouns, are correct; (3) and whether there are any mistakes in capitalization and punctuation. In making these investigations the pupil is to have the free use of his grammar and, if he is in doubt, should be encouraged to apply to his teacher for counsel and assistance. In answering the first query he should mentally divide each sentence into its complete subject and complete predicate. All mistakes are corrected as they are found. While conducting my own experiments on this method, I was surprised to find how few children had ever learned to use the index to a book.

Lastly, the children should read the compositions a third time, under instruction to take care that every word is properly spelled. When the child is in doubt he should at once look up the word in a dictionary.

The reading aloud of two or three compositions each day and the questions referred by the pupils to their teacher, show how well the work of correction has been performed.

The results of this method, so far as I have been able to

ascertain them, indicate that the composition lesson, instead of being a season of deep depression, is one of the most interesting periods of the day, and that the majority of the pupils acquire facility not only in expression but in correcting their own errors. By looking for one kind of error at a time, nearly every important error is detected and corrected. With practice, children soon learn to avoid the errors they are constantly called upon to correct.

It may be added that, after a few trials, all of this work may be done within a period of thirty minutes.

The only objection that has been brought against the method is that in each class there are found a few children who, while pretending to look for their errors, are really doing nothing. This objection, however, is easily overcome by the teacher's calling such children to her desk and requiring them to go through the various exercises under her immediate direction.

The compositions, after they have undergone these processes of erasure and interlineation, do not look so pretty as compositions that have been slowly and painfully copied after being interlined by the teacher. To the uninitiated they would not appear so fine, if shown at a World's Fair educational exhibition; but to the experienced eye they tell of honest and intelligent effort on the part of the child, and of burdens lifted from the shoulders of the teacher.

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Other articles on the same general subject have appeared in the EDUCATIONAL REVIEW, as follows: The function of literature in elementary schools, by George E. Hardy, July, 1891; On teaching the effective use of English, by A. P. Marble, January, 1892; English composition in colleges, by Professor George R. Carpenter, December, 1892; The Harvard report on the teaching of English, by Samuel Thurber, April, 1893.

## IV

## THE STUDY OF EDUCATION AT HARVARD UNIVERSITY

The study of education occupies to-day a place not unlike that held by the mother-tongue but a few years ago. It has been but a short time since English was a very subordinate subject in our colleges and secondary schools. The educational value of the mother-tongue was commonly not recognized. It was taken for granted that one who had spoken his own language from infancy and had employed it daily in the pursuit of all his intellectual acquisitions, including perhaps a foreign language or two, must, incidentally and without any special training, have learned a great deal about this instrument of all his acquisitions; must have learned to use his mother-tongue with ease, accuracy, and vigor, and must have learned to love and appreciate its literature. In time it was learned, however, that the facts failed to justify this remarkable assumption. It was seen at last that neither the haphazard training of experience and environment, nor the use of the mother-tongue in intellectual acquisition could, without special training, be trusted to develop an adequate command of the mother-tongue itself; and that the treasures of English literature, with their vast influence on aims and character, in most instances, did not reach the young at all. With the recognition of these facts, the indifference with which the study of English was regarded could not last. To-day English has a respectable place in the programmes of most high schools and academies. In the best colleges it has won an honorable place.

Not so the study of education. Until recently education has been studied only in professional schools—the normal schools for the training of primary and grammar school teachers. Up to the present time I know of no secondary school in which at least the history of education is studied. College and university courses on education and teaching are

still quite generally regarded as purely professional courses, designed only for those who intend to teach. The idea that education in its historical, theoretical, and practical phases deserves to be studied, and to some extent should be studied by all college students, irrespective of their future profession, is still quite as novel as was the demand which was made repeatedly and ultimately heeded some years ago that the mother tongue deserves to be carefully studied by all persons seeking a liberal education.

Just as it was at one time deemed superfluous to study English, so it is still thought superfluous to study education. Although it is recognized universally that on the education of the young the future welfare of individuals and of nations depends, and that consequently the education of the young is the most important duty the present generation owes to the next; although it is acknowledged that education underlies all the activities of the race, all the arts both of peace and war, yet the study of this important activity itself is still regarded by the non-professional student with indifference and neglect. What Herbert Spencer wrote more than thirty years ago deserves to be urged with added emphasis to-day: "Strangely enough, the most glaring defect in our programme of education is entirely overlooked. While much is being done in the detailed improvement of our systems in respect both of matter and manner, the most pressing desideratum has not yet been recognized as a desideratum. . . The subject which involves all other subjects, and therefore the subject in which the education of everyone should culminate, is the theory and practice of education."

Contrary to what would naturally be expected, this apathy regarding the study of education has been most characteristic of those who were most liberally educated. Until recently the attitude of many college-bred teachers in secondary schools, and of many college professors toward courses in education and teaching was, in general, one of indifference; sometimes, of aggressive opposition. Naturally the students shared the indifference of the professors. Even for future teachers, for

men who should be thoroughly equipped at all points for the exigencies of their future profession, it was at one time doubted that instruction in education and teaching could be of real value. Indeed such value was positively denied. The opinion was current that no amount of preliminary study of the problems and processes involved in education could improve the teacher's work. It was held that the complex activities of a city school system could not be studied and understood, to any respectable degree, without setting the student to teaching a school, without plunging him *in medias res*, where, it may be remarked in passing, his professional horizon would be limited by his grade or his school. According to the same view, the important questions pertaining to the choice of subject-matter and to the order and distribution of the subjects in a course of study could only be satisfactorily answered while the teacher was wholly absorbed in teaching some particular subject or doing the work of a particular grade. The general principles of a method of teaching could not be formulated because every man must have his own method; method being confused with manner. The important question *with what aim* could not be profitably considered until, after years of wasteful groping and experimenting, each teacher had consciously or unconsciously formulated an aim for himself. The experience of the past, it was held, in formulating and testing educational theories and practices, unlike the past experience of the race in all other respects, had no value in helping the parent and teacher of to-day to avoid useless experiments and false theories. In other words: in education there is no lesson in the accumulation of past experience, everything must be done over again from the beginning; Plato, Quintilian, Bacon, Comenius, Locke, Rousseau, Pestalozzi, Froebel, Herbart, and a host of others had no message to humanity, as regards education, worth attending to. The special study of children, questions of school hygiene, school architecture, a careful comparative study of city, state, and foreign school systems, all these things could have no value to an ambitious and earnest man who looked forward to teaching as his life work. Further, it was held that the political

history of nations, but not the history of education ; philosophy and ethics and psychology, but not the application of them to the development of a complete manhood and womanhood ; natural science, but not the natural history of children ; the study of existing political institutions, and a formative social science, but not of existing educational institutions and of a formative educational science ; special researches in every department of human thought and activity were profitable, save in the domain of education and teaching.

It was in the nature of things that such opinions regarding the study of education and the professional training of teachers should not endure. They have well-nigh passed away. To-day no subject occupies a more important place in the minds of the educated public than the aims and the practices involved in education. The discussion of educational questions is no longer confined to professional books and journals, but forms a part of the matter offered to the general public in the current magazines, and even in the daily papers. Such questions have a universal interest, for educational problems have to be solved in every home, as well as in every school and school system. Finally in the colleges and universities the old indifference has given place to active interest, and the establishment of departments or of courses for the study of education and teaching has naturally followed.

At Harvard University such courses were first announced two years ago. They were from the start recognized as belonging to the department of philosophy. They could not at first be counted for any degree in arts, but by a recent vote of the faculty they are all hereafter to count for those degrees. By this action these courses are offered to all classes of students alike, to those who study education as they study English, history, political and social science, and philosophy as essential elements of a liberal education, and those who study education and teaching with a view to their future profession. They are also intended to meet the wants of those teachers who are already in service, and who, on the basis of a thorough scholarship, and more or less experience in teaching,

now seek in the history and theory of their art, and in the comparative study of schools and school systems, the inspiration and guidance they need for continuous growth.

One of the functions of a college education is to qualify men for intelligent leadership. This function the college can discharge in behalf of education by giving the general student an opportunity to study that subject. The student who seeks general culture in his college course, who has no desire to be a specialist, and who does not intend to teach, may not care to pursue all the courses provided for the training of teachers, any more than he might care to take all the work in physics or in botany intended for those who are to become electrical engineers or specialists in botany. But some acquaintance with the evolution of educational ideals, and with the educational institutions of the past, together with an attempt to bring educational practices to the test of principles may well engage the attention of a man aiming at a "liberal education." Moreover, educational means and practices are very important factors in the evolution of nations, and in their social, political, industrial, and commercial development; factors which, strange to say, have been much neglected by historians. It will be different hereafter. The world is rapidly outgrowing its traditional worship of war heroes and rulers, and turns with interest and affection to the thinkers and the doers without whose help civilization would have been impossible. To the net result which we call civilization the thinkers and doers in education—the educational writers and the great teachers—have contributed their full share. Again, there is no more interesting, as there can be no more profitable pursuit, than the endeavor to trace the laws of mental and moral development, and to apply those laws, so far as they are ascertained, to justify sound educational practices and to point out and remedy defective education. But this is precisely one function of educational theory. If, then, the non-professional student pursues the theory and history of education, he may acquire not only valuable elements of general culture, but also important data for the development of sound educational views which cannot

fail to be of service to him and to society at some future time. College courses in the history and theory of education are accordingly intended for every student who, having sufficient maturity and scholarship to pursue those courses with profit, manifests the natural interest of a cultivated youth in the problems of education, and who feels the importance of suitable preparation for participation in educational affairs. At the same time these courses form the natural introduction to the professional study of those students who intend to teach. If it is important for all students to have some conception of the aims and means of education, it is especially important for those students who intend to teach. "The aim of all those who educate and demand education is determined by the range of thought they bring to the subject." It is not too much to say that at present the educational horizon of most teachers, even of the most conscientious, is limited by their class rooms and the subjects they have to teach. The daily acquisition by their pupils of so much language or mathematics or science is the task to which they devote themselves. . . "We teach and teach until, like drumming pedagogues, we lose the thought that what we teach has higher aims than being taught and learned."[1]

It is a truism to say that to teach does not mean to impart information, or, at most, to make sure that the pupil has acquired information or has accomplished a set task. It is an equal truism to assert that too commonly we teach as if this truth were quite unknown. We forget or ignore the important fact that the effect of the process of acquiring and the subsequent effect of the acquisition as a permanent mental possession are of much more importance than mere acquisition. The teaching of language, mathematics, or science acquires new meaning as soon as we ask a man *to what end?* "How many secondary school-teachers still insist, in accordance with a bad tradition, on regarding themselves simply as teachers of this or that subject—English, or Latin, or mathematics, as the

[1] I quote from memory.

case may be," and fail to realize that "for this a totally different idea of their function has to be substituted and firmly grasped, and that idea is that they are not primarily teachers of subjects at all, but teachers of minds by means of subjects?" How many realize that the kind and range of subject-matter and the mode of its acquisition must determine the pupil's interest; that his emotional life and his motives will grow out of his interests; and that, consequently, his range of thought and consciousness of power furnish the incentive and motive power of his will? In other words, how many of us realize that the purpose of instruction is not knowledge alone, nor the cultivation of power alone, nor yet the cultivation of both knowledge and power for their own sake; but that through them the pupil may ultimately develop manifold interests, moral insight, generous sympathies, and a vigorous will; that in short the ultimate aim of education is to help the pupil to become a man who takes his place in the world as an active participator in its affairs; not simply for his own ends, but as one who, while fulfilling his private duties, works with his fellow-man for the continued improvement and happiness of the race?

Such questions point to the first function of professional study. Nothing imparts such vigor and definiteness to a man's work as the consciousness of an appropriate and attainable end. The conception of such aims never can make a teacher's work mechanical, or render him oblivious to the individual needs of the pupils; but it will make him doubly conscious of his own shortcomings and doubly eager to adapt his work to the wants of every pupil. Without the inspiration of such aims, details lose their significance, and work is likely to degenerate into mere routine, to become spiritless and perfunctory, profitless. But the conception of a definite end is not enough. How is that end to be attained? So far as this question can be answered theoretically it is given by psychology. From psychology we learn that "Education must conform to the natural process of mental evolution—that there is a certain sequence in which the faculties spontaneously develop, and a

certain kind of knowledge which each requires during its development; and that it is for us to ascertain this sequence and supply this knowledge." But such a knowledge of psychology is not to be derived from books nor from courses of lectures, although books and lectures may provide a valuable introduction to the acquisition of such knowledge. The living knowledge of psychology and the power to apply it, however, are to be derived only from patient study of the living and developing mind. Having learned through such study to observe how intelligence develops, how knowledge is acquired, and how character is evolved, the general principles of *method* which conform to these processes may be provisionally formulated. To enumerate all the principles of method would thus be to formulate directions for stimulating and guiding the mind's activity in accordance with every law afforded by psychology. In other words, he who possesses a knowledge of psychology at the same time possesses by implication the general principles of teaching methods. This is the second function of the course of educational theory—to present the principles of method with illustrations of actual practice. Educational theory must seek to answer two fundamental questions: First, What to do? Second, How to do it? There is no need here to discuss the abuse of "methods"; such abuses can only arise from pure imitation of practices without an examination of the principles to which method should conform, *i. e.*, they are possible only to the pure empiric.

But theory must be brought to the test of practice. For this, the history of education gives important aid. The history of education reveals not only the educational ideals of the past, but also their effect on the development of the individual and of society. The study of the history of education should therefore follow closely upon the study of educational theory. Thus through educational theory and through the history of educational theories and practices the student becomes acquainted with the aims of past and present workers, and is led to subject those aims and practices to a critical examination. This is the object of the courses in the theory and his-

tory of education provided for graduates and undergraduates at Harvard University. These two courses fulfill another important function in that they indicate the further lines of study which a professional student must pursue; and the course in history incidentally gives such a student much useful information concerning the actual conduct of schools and classes.

One of the chief functions of a university is to train well equipped teachers. Realizing that scholarship, while fundamental, is by no means the only requisite in the training of teachers, the university must also provide the requisite professional training for those students who intend to teach. The professional student cannot be content with theoretical and historical study. He must familiarize himself with actual practices. He must study the organization of present school systems in actual operation, he must be familiar with the means available to the teacher for the realization of his ends, he must know some of the practical daily problems of organization, management, and teaching, and must have learned how those problems are to be met.

At Harvard two courses are provided for this study, intended especially for graduate students, but also for undergraduates of unusual maturity who have already had experience as teachers and for teachers now in service who have some time and strength to devote to professional study: that is to say, for graduate students who intend to teach and for teachers, whether graduates or undergraduates, and whether in actual service or in college. The first of these two courses deals with the organization and management of public schools and academies and with the details of supervision courses of study and instruction. The location of the university in the midst of a number of cities affords students unusual opportunities to study the organization and work of city school systems in actual operation. Through the courtesy of school officers and teachers the students of the university have access to the class rooms of schools in its vicinity. These are opportunities which the students value greatly and which they have

already improved to good advantage. At the end of the year each student in this course submits a detailed report embodying the results of his comparative studies. In this report he presents, among other things, his own ideal course of study, defends it, and points out how it should be administered. Such a course, it is readily seen, aims to give to men who look forward to the higher positions in the public school service, and to teachers in service who seek promotion, the equipment which they need to meet the difficult problems involved in planning and managing city schools and school systems. With their training in theory and history, their study of existing conditions, and their acquaintance with the actual problems to be solved, such men are prepared to assume the conduct of schools and school systems, with an equipment hitherto unattainable except through years of experience. Of course it is not maintained that such training can ever take the place of experience, but it is claimed that such training illuminates experience and greatly shortens, or obviates altogether, the period of indefinite experimentation which men who have not had such training invariably undergo.

No part of our educational organization is in greater need of thorough study than that designated as secondary education—the work of the high schools and academies. The condition of secondary education in this country has long been the subject of serious consideration, and now, owing to the work of the Committee of Ten, we are in possession of a valuable means of studying it and improving it.

Moreover, both in France and Germany, secondary education has been the subject of a reform movement whose interest and importance are as great as the interest and importance of the corresponding movement in our own country. Full reports of these foreign movements are already accessible. There is thus already within the range of professional study an extremely valuable body of recent considerations bearing on the aims and the means of secondary education; and more of such literature is soon to follow. No one can doubt the value of a careful analysis of such work, by teachers already

in service, and its extreme importance to men who are about entering on their careers as teachers in secondary schools. At the beginning of this paper I pointed out that a conscious aim and a clear conception of means were rare in teachers of secondary schools, and that consequently their teaching is defective, owing to a narrow or imperfect conception of their work. Narrow and vague conceptions, to say nothing of the false aims and conceptions of teachers already in service, must give way before the broadening and clarifying effect of a careful consideration of deliberate and definite views; and the development of just aims and clear conceptions in the mind of the neophyte is a no less certain result of such study.

Such considerations prompted the organization of the pedagogical seminary for the study of secondary education at Harvard University. The members of the seminary are principals and teachers of high schools and academies, and graduate students who look forward to teaching in such institutions. The work comprises a study of the aims, organization, equipment, and work of secondary education, and for this year, more particularly, the curriculum of the secondary school. While in a course described above students are required to make a comparative study of school systems and of the teaching of some one subject, so members of the seminary make a comparative study of the curricula of secondary schools in this vicinity and elsewhere, each member making a detailed study of the portions of the curriculum and of the teaching of those subjects in which he is especially interested. The questions to be considered with respect to the curriculum pertain to the selection of the subjects, their order and distribution, the time to be devoted to each, the methods of teaching them, and the tests that may be employed either for teaching purposes or to determine promotions. In a field so broad it is not expected that the whole secondary curriculum can be studied in this way in a single year; but the portions selected are undertaken in accordance with the needs of the members of the seminary. Each member of the seminary reports the results of his own comparative studies, together

with the bibliography bearing upon his particular portion of the field. Much stress is laid on these reports and the discussions to which they may give rise. In addition to this work each member also selects some topic of general interest in secondary education for a year's study. Toward the close of the year the reports on these general topics will be successively presented and discussed.

In this paper I have endeavored to point out briefly the importance of a knowledge of the principles of education to all thinking persons, and to all college students in particular, whether they are to be teachers or not. And in the incidental description of what the courses in Education at Harvard University are designed to accomplish for teachers already in service, and for the professional and non-professional students still in college, I have sought to remove possible misconceptions in the minds of those to whom such courses are comparatively new, and to give some notion of their real aim. It will not be necessary in the light of what has gone before to explain that such courses do not exist as a sort of dispensary of patent "methods," nor to proclaim a "universally valid science of education"; but to furnish sources of inspiration and guidance to teachers already in service, and to help young graduates to enter upon their profession as teachers with a more definite conception of the means and the aims of education than has hitherto been the case.

In addition to the four fundamental courses in education and teaching incidentally described above, the university also offers this year to primary and grammar school teachers now in service, courses in English composition, botany, and physics. These three courses are not courses in *methods;* their chief aim is to help teachers to acquire the scholarship that is the first requisite to successful work. They were intended especially to meet the wants of primary and grammar school teachers in the city of Cambridge, but they are by no means limited to such teachers.

Lectures on the teaching of French are also offered this year by a member of the French department. Lectures on

the teaching of mathematics, English, French, German, history, Latin, Greek, physics, chemistry, geology, geography, zoölogy, and botany were offered by members of the corresponding departments in each of the past two years. It is hoped that such lectures will be repeated from time to time.

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Other articles in this series have already appeared, as follows: Is there a science of education, by Professor Josiah Royce, January and February, 1891; The study of education at Cornell University, by Professor S. G. Williams, April, 1892; at Stanford University, by Professor Earl Barnes, November, 1893; at the University of Michigan, by Professor B. A. Hinsdale, December, 1893; at the University of Edinburgh, by Professor S. S. Laurie, January, 1894; at the Sorbonne, by Professor Henri Marion, February, 1894.

V

## EDUCATIONAL EXHIBITS AT THE COLUMBIAN EXPOSITION (III)[1]

The public school exhibits at the Columbian Exposition proved to be of great value to the student of education. This was not because they presented a complete picture of the best systems of public education the world over, for they did not; nor was it because they fairly represented the work done in the schools of any single country, for this was not true even of the United States. The great value of the exhibits was due to the fact that in spite of their fragmentary character and (in many cases) hasty preparation, they embodied ideas and ideals of popular education that could not fail to be helpful and inspiring to every thoughtful visitor. They afforded teachers an opportunity to compare the plans, methods, and results of the school work of many different nations and to see how widespread is the present interest in certain great educational movements. Recognition of the value of nature-study, the use of objective methods, the incorporation of kindergarten and manual training schools into systems of public education, these and many other important features of educational progress were illustrated not only by exhibits from the United States, but also by school work sent from such widely separated countries as Japan, Canada, Russia, and the Argentine Republic. Visitors found, also, that both at home and abroad increasing attention is being paid to the training of teachers and the building-up of a science of education, and that from distant Montevideo to Tokio on the one side, and St. Petersburg on the other, there are growing up educational museums which are important factors in the development of national

[1] Begun in VI: 268; VIII: 129

systems of education. American teachers were newly aroused to a recognition of the many ways in which a well-equipped museum would help them in their work, and they frequently expressed a hope that America would not neglect this great opportunity to secure the most important World's Fair collections and found such a museum. They will be interested to learn that this plan has been carried out, and that the city of Philadelphia has secured some of these collections, and intends to provide for the establishment and maintenance of a great educational museum.

During the Fair the foreign collections were of little use to students of education, since many of them were placed in out-of-the-way corners, and some were not even unpacked because of the limited amount of space assigned for educational exhibits. It was deplorable that the men who conceived and carried out the plans for the Fair on such a magnificent scale, should fail to recognize the importance of providing properly for the educational section. It should have been assigned the choicest spot in all the Fair. A recent writer has said: "The progress of man toward higher civilization results from a combination of two important movements: first, that which aims at the acquisition and diffusion of knowledge; and second, that which seeks to apply this knowledge in the arts." The World's Fair officials spent millions of dollars in representing the historical development and the present condition of the arts; but they waited until the Fair was almost ready to be opened before giving formal recognition to the institutions which make it possible to maintain these same arts in their present state, and to develop them still further.

The space when assigned, although far too small for the purpose for which it was intended, was larger than had been given to education at any previous World's Fair. The greater part of it was devoted to exhibits of public education, and contained a wealth of material for studying important public school questions, such as centralized authority *vs.* local self-government; trained teachers *vs.* untrained; individual freedom for teacher and pupil *vs.* rigid restriction of such freedom; the use

of text-books *vs.* the study of nature; and purely intellectual discipline *vs.* the simultaneous training of head, heart, and hand. The foreign exhibits contained much valuable material for study along all of these lines, but the writer will use them in this article merely as illustrations of points made in discussing the United States' exhibits.

There were two ways in which the visitor could get a broad view of public education in the United States: first, by studying the exhibit sent from Washington by the Bureau of Education; and second, by studying the exhibits of organization and administration in the several State sections. The exhibit of the Bureau of Education was intended to show what attitude the national government assumes toward schools and colleges in this country, viz., one of encouragement and moral support to every educational institution, and of direct assistance to three important classes of schools: (1) The public schools in each new State. (2) Agricultural colleges (of which there is at least one in every State in the Union); and (3) the schools of Alaska. The bureau also co-operates with school-men, as far as its funds permit, in translating foreign publications, and in collecting and publishing information of any sort that will help the cause of education.

The government exhibit therefore consisted largely of the publications of the bureau, including books, charts, maps, and statistics; books collected by the bureau, such as catalogues of the colleges and universities of the world; catalogues of secondary schools, copies of educational journals, and reports of State and local school superintendents. There were also an interesting showing of Alaskan school work and the collective exhibit of agricultural colleges which was mentioned in a previous article.

It was necessary, however, to examine the State exhibits in order to study the actual conditions under which public school work in different parts of the country is carried on. The diversity found in the exhibits of school laws and organization showed at once how entirely independent each State is in controlling these matters. In some States, *e. g.*, Indiana, the

authority is centralized, while in others, notably Massachusetts, the principle of local self-government prevails. In studying the educational exhibits this fact had to be kept in mind constantly in order to estimate properly the importance of small collective exhibits as compared with large individual exhibits.

Nearly every State exhibiting made some attempt to show school resources and organization, but only four or five did this with marked success. Massachusetts, New York, and Michigan were among the foremost, sending maps, charts, and printed documents, and using a great variety of graphic and tabular methods to illustrate important features of their respective State systems.

New York sent a large wall map on which were indicated not only the location of every educational institution in the State, but also the character of each, whether public or private; if sectarian, whether Protestant or Catholic, how supported, and whether it admits men only, or women only, or both. This map was a masterpiece in graphic representation, and attracted a great deal of attention.

Michigan sent a smaller wall map, answering many of the same questions by a similar system of arbitrary signs, and added a series of county maps that were placed on wing frames at the level of the eye, and could contain therefore a far larger number of details than if hung on the wall. By the side of each map was a column of statistics in regard to the schools shown upon it, giving school population and attendance; the number of teachers (male and female), and the average salaries of each; the number of schoolhouses and their capacity; the cost of maintaining the public schools, and statements in regard to the taxes assessed for their support. These maps were supplemented by graphic charts on which the important totals of the public school statistics of the State were separately shown, and by a series of photographs of the buildings, the teachers and the pupils of representative schools throughout its State. Each photograph was accompanied by a concise statement in regard to the courses of study, the cost of maintenance, and the number of teachers and pupils in the school

shown. To represent the administration of all of these schools there were collected in a single volume typical sets of the administrative blanks used by the central authorities, and by many of the best schools in the State.

This splendid showing of organization and administration, together with the exhibit of pupils' work, gave a good picture of public education in Michigan from the kindergarten to the university. The visitor could study the State system as a system, and see where the schools are, of what materials they are built, how well attended, what the pupils look like, what they study, what preparation the teachers have had, what salaries they receive, how school funds are raised and finances managed, and how school supervision and other details of organization are controlled. Michigan is not mentioned thus prominently because the separate parts of its exhibit were necessarily better than the corresponding parts of other exhibits. On the contrary the collection of pupils' work, for example, was very inadequate to represent the schools of the State or even of its larger cities. It is mentioned because, in showing its system as such, it combined nearly all of the good features to be found in the State exhibits.

California sent relief maps to show the distribution of her rural schools; and South Dakota sent maps showing the location of school lands. A number of States contributed fine statistical charts, and several sent collections of reports and school laws. New York made a very comprehensive showing of the work of the Board of Regents, including in it many reports and bound volumes and some valuable graphic charts.

Only a few States sent maps to show the location of every public school building, but nearly all sent numerous illustrations of school architecture. These included photographs of the exteriors of public school buildings, plans and elevations of typical city and country schools; descriptions of the methods used in heating, lighting, and ventilating schoolhouses, and photographs of interiors showing the general appearance of recitation rooms and laboratories in use, their furniture and fittings, and, in many instances, the pupils themselves, either busy at

work or else grouped in the foreground. It was noticeable that many of the Western cities had especially handsome schoolhouses, and that in all parts of the country the schools recently built showed a marked advance over their predecessors, both in architectural beauty and in fitness for school work.

The fine collection of photographs sent by the Bureau of Education to represent library architecture should also be mentioned here. It contained numerous plans and elevations and about two hundred photographs of large library buildings in all parts of the country, and it was studied with great care by visitors. In many parts of the educational section there were supplementary exhibits—reports, bibliographies, and statistical tables—giving further information about libraries. It was very interesting to study the American library exhibits in connection with those sent by the German and other foreign governments, in order to see how our country compares with the other leading countries of the world in providing for this great department of public education.

School architecture and equipment were also represented by a number of model schoolrooms fitted up for the use of the several active exhibits. These were located in various parts of the grounds, and although only one or two were designed to represent public school work, all of them will be noted here for the reason that a model room ought to show the best equipment for every school of the grade represented, whether public or private.

There were two of these rooms in the Illinois building. One was fitted up under the direction of the State Superintendent of Public Instruction and contained a representative collection of school furniture for teachers and pupils and also a considerable amount of apparatus for instruction—maps, pictures and diagrammatic charts, collections and apparatus for science work and kindergarten teaching, and a few textbooks.

The other was a light airy room in which, under the auspices of the Illinois Board of Lady Managers, a kindergarten was in daily session. It had large windows on the south and east

sides, the walls were prettily tinted and decorated, the window seats were filled with flowers, and there was the usual kindergarten furniture. It showed not an elaborate ideal, but simply an attractive, cheerful schoolroom such as ought to be provided, if possible, for every kindergarten.

In the children's building there were several model rooms: a *crèche* in which the babies were cared for by nurses and the "toddlers" were amused with toys and games; a kitchen garden containing the appliances needed in teaching elementary housewifery; a gymnasium provided with simple apparatus for body-building; a deaf and dumb school which had no especially unique school furniture; and a Sloyd workshop. The latter was equipped with the benches and tools needed in constructing the entire series of models that are made in the Sloyd school in Boston, and it attracted a greal deal of attention and favorable comment.

The Indian school building in the southern part of the grounds was not intended to be typical of what a school of this kind should be. It was necessarily small, and without the machinery and other appliances needed in teaching the more important industrial branches, and yet it illustrated very well the problems that must be met in these schools; and by means of well-arranged rooms for work and for recitation, and also by photographs and transparencies showing the buildings of several Indian schools, it gave to the visitor a tolerably good idea of how such institutions are equipped.

There were in various parts of the educational section interesting exhibits of school furniture. The Bureau of Education showed models illustrating the historical development of American 'invention along this line; several manufacturers sent specimens of the furniture now on the market; and a number of foreign countries—notably Uruguay and Japan—showed models of school furniture and fittings.

Appliances and apparatus for instruction did not occupy a very large part of the space devoted to school exhibits. This was largely due to the fact that the objective methods now so generally recognized as an indispensable feature of every

scheme of education make it possible to use so many things as "apparatus for instruction" that not merely the contents of a single section but nearly everything in the Fair might be classed under this head by one or another kind of school. There were, however, several exhibits designed especially to show the apparatus used for teaching the principles of science in secondary schools. One represented the amount of apparatus that a school must have in order to secure a special appropriation from the University of the State of New York, and near it was a fuller collection intended to show what additional appliances these schools are expected to obtain as soon as their funds permit.

There were several collections of apparatus made by students in schools for the training of teachers. The most important of these was from the Teachers College in New York, and consisted of one hundred specimens of simple apparatus for instruction in physics, chemistry, and physiology. The construction and use of each piece were explained by means of diagrams and printed statements. This collection was carefully studied by a great many teachers, who regarded it as one of the most helpful parts of the entire educational exhibit. Several normal schools sent smaller collections of a similar nature, and some added simple apparatus for teaching geology, botany, and other subjects.

Normal schools did not on the whole make very extensive exhibits, as they seemed to feel that their work was hard to represent. It is true that the training of teachers is a process of developing an inner power that does not find immediate outward expression, and that many of the methods used can be illustrated only in an active exhibit. There are, nevertheless, important parts of normal school work that can be shown.

A number of State normal schools sent collections of photographs and bound volumes of written work, but usually not enough to enable visitors to study the methods they use or the results they have achieved. A few exhibits, notably those from New Jersey, New York, and Massachusetts, were more satisfactory in this respect, and the Illinois exhibit contained a

most valuable normal school section. The latter was in two parts, the State schools being shown in the Illinois building, and the Cook County school in the Children's building. The large amount of space available gave the normal schools of Illinois a great advantage over those of other States, and they used it well. They devoted a part of the wall space to showing, by means of a series of charts, the courses of study they offer, and the inter-relations of these courses. Below were volumes of written papers representing work done by pupils in each subject of study, and also herbaria and other scientific collections made by students. Equipment was represented by means of photographs, and the work of model schools was shown in its relation to normal school training. Methods for nature study and various kinds of illustrative work were prominent in each of the three exhibits, especially in that of the Cook County school.

The exhibits above noted were very essential features of the public school section, but of course the greater part of the space was filled with pupils' work; the walls being covered chiefly with the results of drawing and form study, and the shelves with volumes of written work, while the cases contained mechanical and scientific products. It was necessary, for the interpretation of this great mass of material, that each exercise shown should be accompanied by a statement of the course of study to which it belonged, the previous preparation of the student who produced it, and the conditions under which he worked on this particular occasion. In most of the exhibits these teacher's statements were wholly lacking, and in only a few were they at all satisfactory.

Many of the State exhibits were so fragmentary that it was impossible to arrange them in a way that would give a good idea of the system as a whole. Those which were more complete did not adopt a common plan of arrangement, and the result was very confusing. A few of the States made up for this defect by providing expert custodians to assist visitors who wanted to study school work, but where there was no regular attendant it interfered seriously with the usefulness of the exhibit.

Illinois and Washington had plenty of room in their State buildings, and were able therefore to carry out the original "gridiron" plan, viz., to arrange school material so that by going through the exhibit in one direction visitors could follow a single subject through successive grades, and by going through at right angles to this direction they could study the work done in every subject taught in a single grade. The material in the Illinois exhibit was grouped under the heads of (*a*) rural schools, (*b*) graded schools, (*c*) high schools, and (*d*) manual training schools. The intention was to make an *institutional* exhibit, *i. e.*, a collective exhibit of the entire public school system of the State rather than an aggregation of individual exhibits from various schools in the State. This proved to be impracticable, because the State has not a uniform system, and there is so much difference between schools of the same grade in different places that no collective exhibit could represent them fairly.

One of the most interesting portions of the Illinois exhibit was sent by the Chicago schools. The greater part of it was displayed on wing frames, of which each was devoted to a single subject of study, and had its contents arranged grade by grade in a progressive series. There were also bound volumes of written work and a number of drawings, and the whole afforded an excellent opportunity to learn something of what the Chicago schools are doing.

The exhibit of science teaching from the high schools of Chicago was especially well arranged. It included work in physics, chemistry, and biology, and bore evidence of being genuine, *i. e.*, pupils' work prepared in the class room or in the laboratory, as a part of the regular course of instruction. The writer does not mean to imply that this work was exceptional in being genuine, but only that it was exceptional in bearing on its face such clear evidence that it was genuine. It included pictures and descriptions of experiments, showing the material and apparatus used, the methods followed, and the results achieved. These exhibits of actual results, used in connection with photographs, showing pupils at work, enabled the visitor

to form a good idea of what the Chicago high schools attempt in science teaching, and how far it is successful.

The science work from Massachusetts and New Jersey and from Kansas City was also especially strong. A unique feature of the Kansas City exhibit represented work done by pupils in collecting seeds, eggs, and insects, caring for them in school laboratories and observing their habits and growth from day to day. Another suggestive science exhibit (sent by a New York academy) contained collections made by pupils during a summer excursion of several weeks, taken for the purpose of supplementing the regular school work by a more direct study of nature.

In many other ways the exhibits showed that there is a marked tendency in the public schools of America toward introducing nature study as a part of the regular course of instruction and cultivating in the pupils habits of careful observation and experiment. After discovering important truths for themselves they are required to describe and interpret what they have discovered. One of the best results of this method is that it gives them a real interest in the language work involved and helps greatly in developing their power of expression. They are also required to make simple sketches to illustrate their notes and compositions. This fixes in their minds some of the more important facts and gives them an additional means of expression.

There is, however, a real danger in allowing the average teacher to attempt to correlate language-work and drawing with science, literature, history, and mathematics. Many of the exhibits of pupils' work, particularly from Western States, served to emphasize this point. It seemed as if certain teachers who attempted correlation had lost their sense of proportion and had allowed pupils to devote far more time and attention to drawings than to the subject-matter they were intended to illustrate. A two-hour sketch is out of place on a fifteen-minute problem in arithmetic. It may be that this error is not as widespread as the exhibits would seem to indicate and that the material shown was prepared for exhibi-

tion purposes instead of being regular school work. At any rate such exhibits were open to criticism, for if they were really representative they showed badly arranged work, and if not they should never have been sent to the Exposition.

The exhibits of form-study and drawing were important features in every State section. They occupied the greater part of the wall space, not because they were of superior excellence, nor because this subject is given a conspicuous place in every grade of public school work, but, in most cases, simply because they were more easily mounted and more showy than other school products. However, there was a great deal of admirable work exhibited, and nearly every current method of teaching drawing was shown in one place or another. In the New Jersey exhibit, for example, there were five cases of pupils' drawings placed side by side, each showing the results of a different system.

The system most fully represented in the public school section was the Prang. In a central location was the "ideal exhibit" arranged by the Prang Company. It contained a typical series of models and exercises intended to show a complete course in geometrical, constructive, and decorative drawing. Many of the neighboring State exhibits served to show, by means of pupils' work, to what extent schools had succeeded in applying this system.

The exhibit of pupils' written work consisted of daily exercises such as compositions, dictations, and laboratory notes; of monthly and annual examinations; and of occasional productions of all kinds. Unfortunately many of the latter were specially prepared for the Exposition, and were revised and copied until it was impossible to tell what they really represented. They formed a marked contrast with the corresponding French exhibits. A single volume sent from Paris by one of the *écoles élémentaires* may be taken as typical of the French method of showing pupils' work. It contained all of the written exercises of a certain boy, from the time he entered school at six years of age until he left eight years later. First there was a picture of him taken when he entered, and a pref-

ace written by his teacher to help readers to interpret the work which followed. Then came exercises and examinations, grouped to show his progress from year to year and to illustrate the successive steps in the course of instruction and the methods used in teaching. There were in the exercises frequent corrections made by the teacher, and on the examination papers were the original marks, showing what credit the pupil received. There were also copies of his record throughout the eight years and of the certificate he received at graduation, together with his photograph taken at fourteen. He was said to be a boy of no more than average ability, but it makes no difference in the value of the exhibit whether or not this is true, because the volume represents not one student entering into unequal competition with others, but an individual steadily developing his faculties and striving to improve on his own previous work. It was necessary that he should attend school in the same place for eight years, and that all of his work should be preserved, in order to make this exhibit possible. Neither of these conditions is likely to obtain in a rapidly growing community, and therefore a similar American exhibit would be difficult to prepare. The fundamental principle involved, viz., the competition of the pupil not with his classmates but with himself, is, however, one that we could easily adapt to American conditions, and thus provide for a better gauge of the efficiency of our school work than was found in home exhibits at the Fair.

Many teachers who studied the school exhibits seemed to feel that work in their own grade was the most important part for them to see. They gave, therefore, comparatively little attention to the broader aspects of the educational exhibits, and confined themselves almost entirely to work which was directly comparable to their own. This may have been the best plan for teachers whose visit to the Fair was so short that they could devote but little time to school exhibits, but this was not always the case. There were some who did not feel any interest in the exhibits from other grades. If our schools should follow the plan adopted by certain of the lower

schools in Germany, viz., of promoting the teacher with the pupils, it would result in giving many of the teachers a wider range of interests, and thus in stimulating them to seek helpful suggestions in the work of every school grade.

Among the World's Fair visitors there were, of course, many teachers who took the broad view of education and were inclined to study, as far as their time would permit, each educational exhibit. Among them none appeared to be more interested in all that the schools had sent than the kindergartners. They wanted to see, not only exhibits representing the work of kindergartens and training classes, but also exhibits showing whether or not the seeds planted in a "child garden" are given opportunity to grow in later school life; whether music is continued through every grade; whether the skill acquired in the occupations is used as a foundation for an uninterrupted course in manual training; whether the development of a love for nature is one of the chief aims of all school work; and whether the social instinct which leads the kindergarten child to recognize that he is only one among many continues to be fostered by the study of history and the social sciences. They found indications that in certain places nearly all of these questions could be answered in the affirmative and in many others they could not.

The real kindergarten exhibits (as contrasted with the exhibits representing kindergarten features in primary schools) were not very numerous, and owing to the difficulty of showing the results of this early work the best of them were far from satisfactory. The one exception to this statement was the active exhibit in the Illinois building. There, every day, a group of well-equipped teachers conducted a model kindergarten that showed to thousands of people, during the summer, a beautiful picture of happy school life. Visitors were admitted to a low gallery at one end of the room, and were requested not to talk while there. The children were brought from their homes to the Fair each morning in an omnibus, and during the session they took part in the plays and games, the songs and occupations—in everything that

is characteristic of a true kindergarten—without paying the slightest attention to visitors or to the many distractions around them. It was a most striking illustration of the influence exerted by a teacher who can make the school work interest her pupils. There were, in addition to the exhibits sent by kindergartens and training classes, several representing manufacturers of kindergarten supplies. Each of these three classes of exhibits was of great value to teachers directly connected with the work, but to the average visitor they did not as a rule give very clear or accurate ideas. There was, however, in the Liberal Arts Gallery, one kindergarten exhibit that attracted a great deal of attention. It was sent by the city of Rochester and contained, in addition to a large amount of material for teaching and of work done by pupils, a series of thirty photographs showing a kindergarten in session. These had been enlarged from kodak pictures taken an artist who spent a day in one of the public kindergartens, sitting among the children and taking a picture whenever he had a good opportunity. The result was a series of photographs representing nearly every important feature of the daily kindergarten programme.

In this discussion of public school and kindergarten exhibits the writer has followed the same plan as in previous articles, and has merely tried to point out some features of the educational section that were worthy of study, leaving it to the specialists in each department to estimate relative values.

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Other articles on educational exhibits at the World's Fair have appeared in the issues of the EDUCATIONAL REVIEW for January, February, March, June, and September, 1893, and January and February, 1894.

## VI

## REPORT OF THE COMMITTEE OF TEN

### I. FROM THE POINT OF VIEW OF EDUCATIONAL THEORY

#### *1. The Educational Ladder*

Shall the probable destination of the pupil of the public school make any difference in the matter or method of the studies he pursues? The one hundred men whose opinions are embodied in the report of the Committee of Ten answer, No. So long as he chooses to remain in school, the training given to the son of the artisan or the farmer shall not differ, so far as any given study is concerned, from that of the future scientist, statesman, or professional man. Not only is this principle to hold good for social classes, but it is to be equally valid for the sexes. Evidently the general acceptance of this theory will touch many and widespread interests.

In the first place, private schools owe much of their support to the conviction that the public schools do not fit for college. In the next place, many colleges adhere to an antiquated programme of studies because private schools consent to honor their requirements, however out of harmony with the spirit of the times. Furthermore, the people in general have the conviction that higher education is good only for a few professions; that it is confessedly out of touch with the economic world, and that, consequently, it is not for them. Naturally, therefore, they have taken little interest in making the public school a road to the college. Many cities indeed take pride in calling the public school the college of the people. On the other hand, it is only in recent times that the managers of higher education, under the splendid leadership of such colleges as Harvard and Cornell, have come to the conviction that the benefits of college education must no longer be the prerogative of a small professional class, but that they must be not

only a privilege but a necessity for the leaders of all classes. This view is summed up in the declaration of President Schurman, that the best leaving requirements of the high schools must speedily be recognized as the best entering requirements for the colleges.

Again, this new principle cuts squarely across the caste idea in education. Germany maintains different schools for different social classes, such as the Volks-, the Bürger-, the Höhere Töchter schools, and the Gymnasia. There is no educational ladder in this system, since nine-tenths of the children of the empire, now in the Volks-schools, have their educational destiny fixed when they enter them at the age of six. These schools lead nowhere except into the ranks of unskilled labor. Ziller defends the scheme on the plea that there is pedagogical advantage in keeping the children of the poor by themselves since, forsooth, their store of interpreting ideas will be substantially alike, and quite different from those possessed by children of higher social classes. If Germans like this sort of thing we need not complain, but the American people are not likely to sacrifice one of the dearest principles of social and political equality—the birthright of every boy and girl in the land—for any poor mess of pedagogical pottage. Small educational advantages there doubtless are in preparing classical, scientific, and technological students differently both as to subject-matter and method in given branches; they are but as chaff to wheat, however, when we consider the importance of making higher education possible to every child.

The only reason this principle has not been active throughout the United States as it is now in many Western States, has been the narrow policy of our colleges, which have heretofore insisted upon stretching or lopping every candidate for entrance until he would fit the classical bed. We are growing into wider conceptions of the function and scope of higher education in these days, for which no one is to be more thanked than the honored chairman of the Committee of Ten.

It might be assumed that the committee recommends that all students of the public high schools should study the same

branches. Nothing could be further from their thought. This would avoid one evil, only to fall into a worse. The broadening of the college curriculum to include modern languages, English and other literatures; biological, physical, chemical, geographical, and other natural sciences; history, politics, economics, and sociology, to say nothing of technology, has made it possible for the high school to appeal to every variety of talent, as the colleges formerly appealed to the linguistic talent, and yet prepare their pupils for some important phase of higher education.

The report will accelerate the reform of the colleges, since it shows that the latter need not inquire so particularly what a student has studied. The college curriculum is now so comprehensive that a student may profitably enter upon a course of higher instruction, no matter upon what phases of the humanities or the sciences the emphasis has been laid in his high school course. Under this enlarged conception of the scope of higher education it is now for the first time practicable to co-ordinate the colleges and the public high schools, so that the educational ladder which has been constructed from the kindergarten to the university in Michigan, Minnesota, and other Western States, is likewise a practicable possibility throughout the Union.

### *2. Concrete vs. Formal Education*

In this connection, the special reports bring out in a light, which to some will be startling, the fact of the substantial abandonment of the well-worn theory of *formal discipline*, or the idea that the mind can store up mechanical force in a few subjects, like grammar and mathematics, which can be used with efficiency in any department of life. We (*i. e.*, all of us except the reformers) usually defend in theory what has been long established in practice. It is not surprising, therefore, that those who have enjoyed the benefits of the liberal culture that the colleges have given in the past should assume that this type of higher education is the only one worthy the name. But the necessities of modern times have forced us to

a broader outlook, which is nowhere more emphasized than in this report. Every one of the sub-conferences claims for its group of subjects an educational value equal to that of every other, and in the main has its claim allowed by the Committee of Ten, though it must be confessed not always for the best reason. The claim is sometimes allowed in such a way as to take one's breath away, as for instance in the following: "Every youth who entered college would have spent four years in studying a few subjects thoroughly; and on the theory that all subjects are to be considered equivalent in educational rank for the purpose of admission to college, it would make no difference which subjects he had chosen from the programme—he would have had four years of strong and effective mental training." This paragraph implies that the formal discipline we have heretofore ascribed to classics and mathematics may really be obtained in the study of anything, consequently it makes no difference what we study. That is, it seeks to correct an erroneous theory by making it universal. Doubtless the Committee of Ten intend that the paragraph quoted shall be taken in a Pickwickian sense, for they nowhere suggest in the programmes they offer that the humanities are so valuable that sciences may be forgotten, or that a pupil can know so much of the physical world that he needs to know nothing of himself or of what the race has done. Should it even turn out that the committee mean just what they seem to say, no harm will ensue, for the programmes offered by the sub-committee and summarized by the Committee of Ten are so rich in matter that no theory of formal discipline that may be attached to them is likely to be injurious. Whatever grains of truth there may be in the doctrine of formal discipline, it is clear that this is not the dominating idea in the reports on the subjects, for evidently it is here assumed that the mind becomes disciplined through the mastery of concrete knowledge—and plenty of it. They set no child to doing things simply because they are hard, but assign him knowledge because it is valuable. How any given programme shall be made up, what phases of the humanities, the sciences, or the economic studies, shall

receive the chief emphasis, is, perhaps properly, left to be decided by the tastes or felt needs of the various communities. The report lays down no guiding principles, expressing its opinion only by means of a few sample programmes. But everywhere throughout the reports of the sub-conferences the thought is conveyed that intellectual power is inseparably connected with ideas—with real knowledge. In each group of subjects, therefore, a full, rich body of knowledge is recommended, whose mastery will secure a well articulated mass of related ideas. Thinking is the perception of relations, and the only way in which we can be taught to think well is to exercise this power on related knowledge. If we have not the ideas, we cannot see the relations. For this reason, an elementary education should exercise the thought not only upon mind as independent of nature, and upon nature as independent of mind, but also upon mind and nature in their economic or practical union. One misses in the report any reference to this last phase of education, there being no treatment of industrial or commercial aspects of high school training. But this only means that we can't do everything all at once and nothing first. It also points to the need of further conferences upon the omitted departments of school work, notably those of industrial and elementary education. The Committee of Ten have attempted little more than a summary of the conclusions of the sub-committees, and the construction of a few possible programmes from their recommendations. The effective co-ordination of such a series of isolated reports is an earnest piece of work, not to be accomplished by mechanical adjustments of time and subject-matter.

The limits of the present paper preclude a discussion of more than the two points mentioned. Of the effect of the report as a whole, there can be but one opinion. It brings to a focus the discussions of a dozen National Educational Associations, and may thus be fairly regarded as the result of the best (unarticulated) American thought upon secondary education. It is in such concrete workable shape that it will prove at once an inspiration and a guide to all who have the

direction of secondary education committed to their charge. Though only a beginning, it is a most promising one.

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II. FROM THE POINT OF VIEW OF THE ENDOWED ACADEMY

The report of the Committee of Ten, and the reports of the conferences, have a peculiar interest to the preparatory schools. The number of these schools is relatively very small, but for several reasons their influence is out of all proportion to their number, size, and cost. The pupils who resort to them as a rule have a much more definite aim and a higher ambition for intellectual distinction than the pupils in other secondary schools. They come from homes in which the higher education is valued. They intend to pursue long and difficult courses of study in school, college, and professional schools. Their progress is not hindered by the indifference of pupils who do not expect to go to college, and who find in this circumstance not a strong motive to zeal and diligence but a temptation to listlessness and remissness. Some of these schools are old, invested with interesting traditions, and have created for themselves, like the colleges, equipment in buildings, grounds, books, and other appliances, and have secured a distinct constituency, not restricted to a single locality but covering a wide area, and influential because it represents not the training of the schools alone, but also the discipline and acquisitions of the colleges and other higher institutions of learning. So far as they have confined themselves to their specific work of preparing pupils for the upper schools, they have been relieved from the multiplication of subjects taught, and been able to concentrate their energy upon the requirements of the schools to which their graduates go up. For the most part they have been free or practically free from the changes and caprices of political control. In many cases their pupils have been withdrawn from the distractions of general society and secluded to academic duties and to regulated

recreations within the school precincts. They have attracted and retained in some notable instances the devoted service of very able and inspiring teachers, whose impress upon the minds of a long succession of selected pupils has been deep and formative. The better schools of this type have been so large and strong that they could resist the disturbing interference and dictation of parents and pupils alike, and maintain with consistency and dignity approved courses of study and established methods of administration and discipline. Under the law of the division of labor, and as a result of the usefulness and prestige of these schools, old and new, their number is rapidly increasing, some being established to meet a local demand and others in the interest of the wider public.

It was impossible, therefore, for the present investigation and report to leave out of the account the preparatory schools. Sufficient place was given to representatives of these schools in making up the committee and the conferences, and many members whose first interest lay elsewhere were familiar with them on account of previous connection with them as teachers, pupils, or governors, or they had been brought otherwise into immediate sympathy with their defects and excellences. If any just charge could be brought against the appointments for this report, it could not be that the work of the preparatory schools had been overlooked or underestimated. Perhaps it would not be too much to say that many of the considerations, suggestions, and conclusions here set forth had been anticipated by one and another of the preparatory schools, and the report is peculiarly acceptable to these schools because it gives the sanction of great authority to programmes, methods, and opinions which had been wrought out already and put to the proof, in a limited and imperfect way indeed, but in accordance with a prevailing drift of educational thought. While it was the express purpose of the committee to discuss "the whole field of secondary education," it was necessary to give special attention to the relations of the secondary education to the higher, and to consider with a peculiar thoroughness and carefulness the *preparatory* element in all kinds of

secondary schools. The adjustment between elementary and secondary education, imperfect as it is, is much better than that between the secondary and the higher education. It was inevitable therefore that the committee should approach their investigation largely from the point of view of the preparatory school.

Dr. Harris, in his brief letter of transmittal, has singled out for special mention two large topics, viz., the definition of secondary studies, and the relative educational values of the several studies. This summarizes admirably the whole discussion. These two questions concern all parts of our education. The battlefield, however, lies in the secondary school. The philosophers must discuss for us educational values; the preparatory schools may express themselves about the adjustment of their own work to that which follows.

Especially welcome is the suggestion with which the report closes, that the schools of law, medicine, engineering, and technology arrange their requirements for admission according to the programmes recommended for secondary schools. Add to this the argument (p. 52) for making these same programmes the standard of proficiency for admission to the colleges and the scientific schools. The mountain is coming to Mahomet! Schools and teachers who for a generation have been pleading and arguing for relief from arbitrary, shifting, and diverse requirements, will feel that at last their contention has received national recognition. Diversity of requirements in the several colleges and scientific schools has been most oppressive to the schools whose pupils have dispersed most widely in their choice of a college, but it has contributed everywhere to the prevailing uncertainty as to what secondary education is, diminished the number of candidates for the higher education, and increased the proportion of candidates who go up hastily and imperfectly prepared. The secondary schools have a right to ask the colleges to agree together as to what constitutes secondary education, and what a candidate ought to know at his entrance upon college work. Nothing external to the schools would do so much to make them good instruments of education as the adoption by the colleges of

the committee's programmes as the basis of all college work. The schools cannot adopt them till they have been accepted by the colleges. The reform is to come down from above. When they are adopted by any considerable number of the best colleges and scientific schools these programmes will appear in the schools, variously modified, no doubt, and gradually improved as occasion demands. The entrance gate to college is so straight, the authority of the college is so imposing, that no school can undertake to send up candidates after some other than the college standard, or persuade its pupils that there is a more excellent way. If we are to have a national education, a prevailing conformity of school programmes will distinctly promote it, and this can be secured, without delay or shock, by the united action of twenty leading colleges, scientific schools, professional schools, and institutes of technology.

The diversity of requirement in the scientific schools has been so extreme that it needs repeated mention. These schools are comparatively new, their endowments have been meager, they have grown rapidly, and their character has been determined by the personal influence of a few strong men working independently of each other, and not by the accumulated tradition of a long experience or by the general consensus of educational opinion. The new science has created a new school. Very early the scientific schools lost faith in their own plan to give only graduate instruction, and, flying to the other extreme, they have admitted students who so far from being college graduates could not even enter college without a year or two of further preparation. Now is an opportune time for them to get together and agree upon what they will require for admission. The recent experience of the classical colleges and the professional schools shows that they need not be timid about advancing their requirements. There is no educational reason why one of these schools should ask for no language but English, a second for French or German, a third for both French and German, a fourth for a good deal of Latin but neither French nor German. The number and

excellence of these schools, and the great hold they have already upon the confidence of our people, make it certain that the secondary schools will be influenced hereafter more and more by the requirements of the scientific schools, and their programmes must conform to those requirements. Better a programme which the committee unanimously pronounce "distinctly inferior" than the present distracting diversity. United action on the part of the scientific schools would be especially helpful in circles dominated by the theory that scientific studies are peculiarly practical.

The report of the committee will strengthen the preparatory schools by their unanimous opinion, based upon the unanimous opinion of the conferences, that "every subject which is taught at all in a secondary school should be taught in the same way and to the same extent to every pupil so long as he pursues it, no matter what the probable destination of the pupil may be, or at what point his education is to cease." Every programme is a compromise. There can be no question that the soldier who keeps step is less likely to drop out, and comes at the end of the march into camp with less fatigue than the soldier who straggles. It is not a question of economy, or simplicity, or intensity alone. The scientific courses demand as much mind and as much discipline as the traditional courses. The opinion is entertained by some members of the committee, and by some members of the conferences, presumably by most of the members of the conferences in the sciences, and modern languages, and history, that one subject "is and by right ought to be" as good as any other for disciplinary purposes, and all are of equivalent rank for purposes of admission to the upper schools. If this opinion prevails it will react in favor of the "dead languages," even for those who do not expect to go to college, at the same time that it secures hospitality for the new studies, which at times, in the arguments of intemperate advocates, have demanded not equality but supremacy. The argument for postponing as long as possible the choice of the pupil between scientific and classical studies is a strong argument for those programmes which lead up to

the longest, hardest courses. The American people are docile as well as independent. If colleges, scientific schools, and secondary schools will construct, adopt, and defend a rational programme for secondary schools—a programme which is liberal in the educational sense—its success is at once assured. The minor details will take care of themselves.

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The history of the formation and work of the Committee of Ten is described in the issues of the EDUCATIONAL REVIEW for October, 1891, September and December, 1892, January, February, June, November, and December, 1893.

Previous articles discussing the reports are by Dr. W. T. Harris (January, 1894) and President Charles W. Eliot (February, 1894).

## VII

# DISCUSSIONS

### ECONOMIC GEOGRAPHY

While the teaching of geography is undergoing a continuous and most fortunate development in that direction which exalts the physical characteristics of the earth's surface over its political subdivisions, it appears to me that more attention might profitably be given to what I would term Economic Geography—*i. e.*, a systematic study of the distribution, over the earth's surface, of the various products that supply the wants of civilized man.

It is true that an atlas of physical geography usually contains a few charts to show the distribution of flora and fauna; that geological maps often indicate the general trend of carboniferous and ferriferous strata; and that statistical publications, such as those of the recent United States Census, contain maps and instructive data upon the districts where other valuable ores abound. But all this information is given incidentally, and can only be studied after laborious consultation of original sources; what we lack is a compilation that would present these facts in a uniform manner for every part of the globe, and maps in which the salient points of this information could be grafted upon the knowledge of the political and physical conformation of the countries.

Economic geography differs in this respect from physical geography, that the latter treats the aspects of nature as the results of cosmic and terrestrial influences; while the former would take these aspects as given causes and examine their influence upon man and his works. In this way, economic geography would connect physical with political geography. This may seem trite, and it will possibly be suggested that every work on physical geography prefaces the subject with a reference to the important effects of the physical aspects of the earth upon the condition of man.

But, though there were geographers before Humboldt who described the physical characteristics of the lands in whose political subdivisions they were chiefly interested, it becomes

evident to the readers of *Cosmos* that the truths of physical geography could never have been reached, had not the observers shifted their standpoint. At the same time, I should not claim for the proposed study the dignity of a new science, but would rather advocate it as an aid to numerous other studies, practical as well as historical; an agency by which the work of the geographer, the geologist, and the statistician might fructify other scientific labor.

To the student of every descriptive science, like botany, chemistry, mineralogy, or zoölogy, a knowledge of the localities where the various species occur has ever been deemed essential, even if its chief value lie in the sense of tangible reality which it imparts to the study. A limited amount of the material for a work on economic geography is already contained in such descriptive treatises.

To the student of technology, a more serious consideration of geographical conditions will often reveal surprising truths. How obvious is the effect which the accessibility of different fuels has upon the metallurgy of iron! The quality of steel or wrought iron that different localities can produce, depends as much upon the relative ease of obtaining charcoal, anthracite, or bituminous coal, as upon the nature of the iron ores. The fuel question has determined the choice of widely divergent methods of silver extraction in Europe and America. On the other hand, geographical location may largely influence the value of an accumulation of raw material; the worth of a gold mine on the Yukon River is more affected by its difficult access than by the richness of its assay. Frequently, too, it will be found that the successful introduction of a manufacture into a district, whose natural advantages for this particular object are not apparent, can be explained by the previous existence of an industry whose waste products are to be utilized or whose output is to be supplemented by the newcomer. It is no small matter to trace the ramifications of productive industries in the Lancashire district of England, the Strassfurt district of Germany, or in those cities of our own West where the enormous production of comestibles has carried with it a hundred industries whose existence in those localities could not be otherwise explained. It is true that the modern advance in rapid and cheap methods of transportation must somewhat diminish the effects of natural advantages of position; but they must always remain of considerable importance.

Most interesting of all would be a study of the relations between the geographical distribution of desirable material and the course of history. Here, again, there is nothing novel in the assertion that greed for material wealth has been more powerful than any intellectual principle in actuating men, both in their peaceful pursuits, and in their quarrels and wars. But the precise way in which the existence of local resources has influenced the course of events is not often pointed out systematically to the student of history. It would seem to me to be of more importance than an investigation of methods of diplomacy or strategy, because the latter depended upon the capacities of individual leaders, while the motives of which I speak must have been common to the mass of the people. In illustration, I shall but touch upon the fact that nearly all geographical discovery is due to motives of trade; the ancients found Britain and Prussia in tracing the sources of tin and amber, just as Columbus discovered America and Vasco de Gama circumnavigated Africa in quest of the gold and spice of Cathay. The fertility of Sicily was alone the reason that Sparta and Athens, Rome and Carthage, Normans and Saracens, French and Neapolitans, made it their battle ground. The Iberian silver mines led Hasdrubal and Hannibal to Spain, thence to attack Rome. On our own continent, we have the best illustration of the effects which the discovery of new mineral or agricultural resources has had upon the flow of population and the advance of civilization.

And if we choose again to look farther, we find that many forbidding corners of the earth are eagerly sought, for some substance which they alone contain. Discover cryolite elsewhere than off the shores of Greenland, richer guano fields than those near Iquique, ivory and copal outside of Africa, exhaust the diamond fields of the Transvaal region, and the communication of these lands with the more civilized world will cease and their population will desert them.

I have not touched upon a point that a student might not find in one of his text-books, but I repeat that connected study alone can open his eyes to their real import.

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## A CHILD'S VOCABULARY

In Professor Laurie's *Lectures on language and linguistic method*, a book worthy of the most careful study by every teacher, occurs, on p. 23, the following: "In the child up to the eighth year the range of language is very small; he probably confines himself to not more than 150 words."

Such a statement from such an authority seemed to me astonishing; so much so that I resolved to test it. I had a little son who, at the time that I read the book, October, 1890, was about 5½ years old. He had not yet attended school and had not learned to read. I provided his mother, a trained teacher, with a small dictionary, and she proceeded during the ensuing month to check in the dictionary each word used understandingly by the boy. When this process was completed, and the words gathered into a classified list, they were found to sum up 1528 distinct words, which were divided among the parts of speech as follows:

| | |
|---|---|
| Nouns, | 883 |
| Pronouns, | 22 |
| Verbs, | 321 |
| Adjectives, | 236 |
| Adverbs, | 40 |
| Prepositions, | 20 |
| Conjunctions, | 5 |
| Interjections, | 1 |
| Total, | 1528 |

Participles and inflected forms in general, except of pronouns, were not counted. The lists have been preserved, and are at the service of anyone who cares to inspect them.

Some time after the count was completed I wrote to Professor Laurie, stating the result for his information. In a letter received from him some time afterward he writes as follows: "I did not say that the child *understood* only 150 words, but probably confined himself within this range in his ordinary conversation. I have modified the statement in a second edition in consequence of your letter. My authority was a statement in a philological article by Max Müller that I read long ago in the *Edinburgh Review*."

It should be noticed that my list is not a list of words *understood*, but of words actually and spontaneously *used* by the child, and the list certainly understates his vocabulary.

It may be well to add that his mother had on her own account recorded his vocabulary at the age of thirty-two months. It may be worth while to give a summary of that earlier list for purposes of comparison. It comprised:

| | |
|---|---|
| Nouns, | 350 |
| Pronouns, | 24 |
| Verbs, | 150 |
| Adjectives, | 60 |
| Adverbs, | 32 |
| Prepositions, | 17 |
| Conjunctions, | 4 |
| Interjections, | 5 |
| Total, | 642 |

It will be observed that, with an apparent shrinkage in his use of pronouns and interjections, there was an immense increase in his use of nouns and adjectives, verbs coming third in the order of the increase.

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## THE BITTER END OF THE OBJECTIVE METHOD

During my experience as a teacher in secondary schools I have come into frequent contact with a type of mind whose chief characteristic is a lack of what I call, for want of a better term, mathematical imagination. The inability to construct a mental picture of the conditions presented cripples at the start a student whose memory of former processes, whose readiness and accuracy in mechanical work, and even, sometimes, whose logical faculties would otherwise produce good results and win credit.

Such a student complains that he doesn't "see through" a difficult point, and he means it literally. In order to appreciate the given data for beginning work, he must have them placed before him in material form, by diagram, model, picture, or other illustrative arrangement of visible objects. Once he *sees* it, he can easily do the subsequent work, but is not helped thereby toward later achievement, for he must also *see* the next difficulty, and someone else must prepare it for his seeing.

This habit of mind is particularly noticeable in girls whose

education was begun in a kindergarten and has been continued on the lines of kindergarten training. Whether it is equally noticeable in boys, I have not, since my attention was directed to the subject, had as good opportunity for judging, but I think it is.

Certainly the kindergarten pupil, whether boy or girl, when transferred to the public school, is graded with pupils below his age, and this is also true of pupils coming from public schools of the extreme "Quincy method" type to less radical mental discipline. By native power such pupils, sometimes, in later years, make up for lost time, but the need I have described usually remains. The cavity left in the foundations is seldom wholly filled in ordinary preparatory school work.

Instances are so common as hardly to need stating. I say to a pupil, who has the figures before her, "Place the triangle *abc* on the triangle *efg* so that the side *ab* shall coincide with the side *ef*. Now, it is not possible that the line *ac* should take the direction of the line *eg* unless the angle *a* equals the angle *e*."

"I don't see why not," is the answer. I explain where the line *ac* must fall in case the angle *a* is greater than the angle *e*, and where in case it is less; but not until scissors are produced, the two triangles are cut from paper, and *abc*, in various supposable shapes, superposed, does my statement become clear to her.

The attention of such a girl being invited to an imaginary strawberry bed in a garden plot, the dimensions of the former being respectively one-third those of the latter, she becomes as unresponsive as a Chinese idol.

"I can't do the 17th at all," she asserts, with a confidence worthy of ability rather than inability.

"Make a diagram," advises the teacher.

"I can't. I don't see how it goes."

"I think you can," insists the teacher calmly.

"Is it like that?" inquires the obtuse one, placing a small card beside a large one.

"No, rather like that," replies the teacher, placing the small card upon the large one.

"Oh, I see; $x$ equals the length of the strawberry bed, and $3x$ equals the length of the garden." And the relieved maiden quickly solves the problem. Why could she not diagram it?

The four small squares that must be added to the dimen-

sions of a lawn in computation concerning the driveway about it have to be illustrated for her every time they appear. Yet I deny that this girl is as stupid as you think her. Moreover, she is not an individual, she is a type. Her name is Semi-Legion, and she is becoming so numerous that the prefix will soon disappear.

Now I believe that this peculiar form of inaptitude arises from the primary education of the child, and I describe it as a cavity in the foundations, because it is not so much an error as a lack.

A child's introduction to mathematical work is always by means of objects. So far, so good. It is well that a child should *see* that four straws and three straws are seven straws, before he learns to say $4+3=7$; but it is not necessary that four splints and three splints should be set before his eyes every time he is asked how many four and three make.

It is not well that all number-work, even of young children, should be done by looking at and counting up objects; and the misunderstanding of the true purpose and use of the objective method which leads a teacher to come before her class with hands always full of "objects," and with a table of illustrations close at hand, results in a class of pupils who, up to trigonometry, still count on their fingers, so to speak.

The objective method is a good thing as an initiatory measure. It is the push that starts the sled downhill; but we do not expect to push the sled all the way. Illustration can easily be carried too far. By this I do not mean that it should be confined to the lowest grade. It should be used to the end of one's education—that is, to one's death—*as an initiatory measure.* Having, however, been used to excite the interest and train the powers of observation, it should not be used as a crutch in steps that ought to be taken without it; but should be supplemented generously, and in many lines of thought replaced by processes wholly mental, until the objective presentation of ideas which have become familiar is an occasional relaxation and pleasure, not a continual support and dependence.

Imagination is not less important in our mental economy than observation. It is not alone in mathematical study that such need is shown. The habit of depending on sensation for complete apprehension, so that one is unable to realize the plan of a strange house without being taken into it, unable to

locate a town or building from directions without seeing it on a map, unable to comprehend the working of a machine without taking it to pieces, is a distinct inconvenience in daily life.

It is not, however, the objectification of one's thoughts that is to be deplored, so much as the inability to objectify them for one's self. Object-lessons are the legitimate beginnings, but in the name of Pestalozzi let them be supplemented by definite intellectual activity on the part of the pupil. Give the object-lesson on unfamiliar topics, where the presence of the material will be a valuable source of information, but do not, even with small children, make it unnecessary for them to use any other power than that of momentary observation.

If I were to give a lesson on the word "bird" to a primary class, I would not bring them a stuffed bird. I would try, the night before, by questions which would call their attention to their ignorance, to arouse their enthusiasm about a familiar bird, and urge them to look at it, to watch it, to *notice* it, and tell me *all* about it in the morning. And I should expect to get information the next day concerning the spots, the tints, the attitudes, and habits of English sparrows that would materially enlarge my own knowledge. During the morning, the bird would be present in the minds of the pupils, if not in visible shape, and many powers would be used instead of one.

You say this is an object-lesson. Well, so much the better; but while yielding to popular recognition of the value of sight over faith in our educational walk, it refuses to yield to the popular demand that energy in the teacher shall permit lethargy in the pupil, and the apparently general principle that a well-taught lesson is better than a well-learned one.

The pushing of a favorite doctrine to extremes finally gives even the best theory the guise of a hurtful fallacy; and when, in the preparatory schools and lower college classes, its results become evident in weaknesses incompatible with a student's proved ability, it is almost or quite too late to remedy the mistake.

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## VIII

# REVIEWS

**Science and Education: Essays**—By THOMAS HUXLEY. New York D. APPLETON & Co., 1894, 451 p. Price $1.25.

This volume, the third of the series of nine that are to gather up all of Mr. Huxley's essays and addresses, contains seventeen papers that deal more or less directly with education. One of them at least was written thirty years ago, and many of them created a strong impression when they were first given to the public. To read these essays over now seems like studying ancient history. Mr. Huxley's main contentions—that a more generous content should be given to the words "a liberal education," that the natural sciences must occupy a considerable place in any scheme of education worthy of the name, and that rigorous scientific method must be pursued at all hazards—are now the merest commonplaces, and it seems hardly credible that less than a generation ago they had to be fought for with every weapon that learning, logic, and eloquence could command. With this change, so far as it has taken place among English-speaking people, Mr. Huxley has had much to do. His enviable gift of simple and forcible exposition, and his command of a sound English style, have kept him in the forefront of the battle between the educational old and the educational new for thirty years. To this fact is due the polemical tone that is observable throughout this book.

The most finished essay in the collection, and the one that appeals particularly to American readers, is that delivered by Mr. Huxley at Baltimore in 1876 on the occasion of the formal opening of the Johns Hopkins University. Here Mr. Huxley sums up admirably his views on higher education, and, in particular, on the study of medicine in a university. This and the several essays dealing directly with medical education preach a sermon that the American people have not yet heeded. The deplorable lack of a sufficient preliminary education on the part of intending students of law and medicine is the darkest spot in all our educational organization. It is disheartening that a

democracy, having the control in its own hands, should permit itself to be served by a class of persons that in Germany, for example, would never be thought of in connection with a so-called learned profession.

But it is not necessary to point out all of the reflections that Mr. Huxley's essays suggest. They should be widely read and often referred to as an integral part of the history of the educational controversies of the past thirty years.

N. M. B.

**Mental Development in the Child**—By W. PREYER, Professor of Physiology in Jena. Translated by H. W. BROWN, of the State Normal School at Worcester, Mass., with a preface by the editor, Dr. W. T. HARRIS. International Education Series, vol. xxiv. New York: D. Appleton & Co., 1893, pp. xxvi, 170. Price $1.00.

**The Psychology of Childhood**—By FREDERICK TRACY, B. A., Fellow in Psychology in Clark University. Boston: D. C. Heath & Co., 1893, pp. 94. Price 50 cents.

**Notes on the Development of a Child**—By MILICENT WASHBURN SHINN, Cand. Phil., with an introduction by JOSEPH LE CONTE. University of California Studies. Published by the University, Berkeley, 1893, pp. 88.

The work of child-study is conveniently divided into four groups: (1) studies of the human embryo; (2) studies of infancy to the age of three or four; (3) studies of the early school years; (4) studies of adolescence.[1] To the second group belong the three books named above, which supplement each other in representing: (1) the special study of a single child, (2) the classification and comparison of observation, and (3) the practical suggestiveness of the results of studies of infancy.

Professor Preyer's new book, though it does not relieve the necessity for preliminary studies in physiology and psychology (p. xvii), or replace the two volumes on the *Mind of the child* (p. 169), forms an excellent introduction to child-study, especially suggestive to parents and to those persons, described by Professor Royce,[2] "who have struggled with Preyer's admirable monograph on the *Mind of the child* in a vain endeavor to extract from its pages an infallible rule of procedure in dealing with very young children." The objects of the book, as stated by the author, are to evoke a more widespread interest in child-study, to initiate parents and others

[1] President Hall in the *Forum*, December, 1893.

[2] EDUCATIONAL REVIEW, I: 124.

into the methods of investigation (p. xvi), to lead parents to realize the great blessing and responsibility of children (p. 170), to secure physiological training in early childhood (p. 140).

Sense development is traced in this order: taste, smell, cutaneous senses, hearing, sight. The senses should be kept "open." There should be special training for color and tone. No child should be excluded from instruction in singing and music (p. 14). Temperaments are classified as sanguine, phlegmatic, choleric, and melancholic, upon the physiological ground of nervous excitability and tenacity. Parents should study the temperaments of their children, and upon this basis determine the principles of their training (p. 29).

The higher intellectual development is dependent upon the origin of the idea of space through the combination of tactile and visual impressions. "Perception differs from sensation essentially in the accession of the spatial and the temporal" (p. 36). An idea is "a sensation defined as to time and space—*i. e.*, a perception which becomes, through the accession of the cause, an object of knowledge" (p. 37).

The origin of the will, as involving motor ideas, impulsive, reflex, and instructive movements, desire, imitation, is discussed with great clearness and brevity. "The whole development and perfecting of the child's will is manifested most plainly in the learning of speech." "Here the error of the old theory, that the intellect has its origin in language, is demonstrated beyond denial."

As to the influence of education as compared with heredity, Professor Preyer does not agree with Darwin. "Strong as heredity is, powerful as its influence appears in the shaping of every organized being at every step, still the influence of external circumstances may surpass it in a psychogenetic respect; and it is just here that is situated the center of gravity of a natural, a physiological pedagogy" (p. 168).

The greatest defect in modern education, in the author's estimation, is that in the first period of the life of the young there is far too little physiological training, and at a later period far too much physiological instruction (p. 41). Two fundamental rules are to be kept in mind, (1) to *spare* the organs of sense and the nervous system; (2) to *exercise* them (p. 162). Suggestion, imitation, self-activity, are treated as principles of exercise. "The principle of diverting the attention" through suggestions without words should be given

an extended and systematic use even from the third to the tenth month (p. 41). The best way to teach children scientific principles is by describing to them how the first discoverers and inventors arrived at those principles (p. 130). The truly reformatory service of Froebel consisted in that he allowed children themselves to invent and discover (p. 130).

The purpose of Professor Preyer in writing this little book has been admirably accomplished; the results of his extended investigation have been presented in a form so concise, practical, and interesting as to secure many new co-operators in the study of the infant mind.

The *Psychology of childhood* has been approved as a thesis for the degree of doctor of philosophy in Clark University. Under the subjects sensation, emotion, intellect, volition, and language, Mr. Tracy summarizes the results of the systematic study of children up to date.

The point of view which mainly determines the classifications and generalizations of the book is the "principle of transformation," explained by the writer as follows: "Every mental phenomenon passes through a graduated ascending series of development. At first the physiological predominates, consciousness is at a minimum, and the so-called mental phenomenon would be more accurately defined as the reaction of the nervous system to external stimuli or to organic conditions. For example, the child cries at intervals from the moment of his birth, but at first this cry is independent of his will and possesses scarcely any mental significance, for it is made without cerebral co-operation, and—as in the case of microcephalic infants—even when the cerebrum is entirely absent. Later the mental aspect becomes more prominent. When the intellect and will have become sufficiently developed, the child directs his attention to the act, makes it his own, and performs it voluntarily. The process perhaps has not changed at all to outward appearance, but when viewed on the inner side, it is seen to have been completely transformed in character; and one of the most difficult tasks for the psychologist is to determine the *when* and the *how* of this transformation." The stages of transformation, especially in the subjects of volition and language, are shown to conform to Preyer's classes: impulsive, reflex, instructive, and ideational.

The final chapter, The language of childhood, is really a separate monograph, reprinted from the *American Journal of*

*Psychology.* The vocabularies of twenty-one children were collected and tabulated, with the object of determining the relative frequency of the various sounds as initial, and the relative frequency of the various parts of speech. All words are classified according to sound. Initial sounds are found to occur most frequently in the order: b, s, k, p, h, d, m, t, w, f, n, g, l, a, r, i, sh, th, e, o, ch, j, y, u, v, q. The order of difficulty in pronunciation, r, l, th, v, sh, y, g, ch, i, j, e, f, t, n, g, d, k, o, w, a, h, m, p, b, was found by considering the relation of the number of mispronunciations to the number of correct pronunciations of each sound. The fact that k stands third on the list of initial sounds "seems to prove that the child does not learn to utter sounds by watching the mouths of those who utter them in his presence."

As to the relative frequency of the various parts of speech, the author concludes that while nouns seem to have the advantage, the proportion of verbs is relatively larger than in the adult vocabulary. "The child learns to use action-words (verbs) more readily than object-words (nouns); and words descriptive of actions (adverbs) more readily than words descriptive of objects (adjectives)" (p. 82). Mr. Tracy sees here "support" for the view that the acquisition of language in the individual and in the race proceeds by similar stages and along similar lines, and he finds "confirmation" of the Froebelian principle that education proceeds most naturally along the line of motor activity. To be sure, notice is given (p. 68) that the conclusions are "set down as empirical laws, awaiting further substantiation." But in forming these conclusions, Mr. Tracy seems to make no distinction between the proportion of verbs in the English language and the proportion used in adult life, and to neglect the influence of imitation and the number of occasions for using the particular words learned, and the further fact that the tables of limited vocabularies given on p. 77 seem to indicate that nouns are used earlier than verbs.

The chief value of Mr. Tracy's work lies in its exhaustiveness combined with brevity, its exact classification, and its freedom from hasty generalization.

In the Introduction to *Notes on the development of a child,* Professor Le Conte states that it requires a rare combination of qualities to be an investigator in the field: "there must be a wide intelligence combined with patience in observing and honesty in recording. There must also be an earnest scientific

spirit, a loving sympathy with the subject of investigation, yet under watchful restraint, lest it cloud the judgment; keenness of intentive perception, yet soberness of judgment in interpretation."

These qualities Miss Shinn is said to possess in an eminent degree; of this her work is evidence. The observations were at first hand and were promptly recorded. The subject, a California girl of New England ancestry, was a healthy child whose development was rapid.

With the exception of monthly measurements of height and weight, the record is limited to the development of sight, mainly during the first two years. Thirty-one of the eighty-eight pages are given to the discussion of color. Yellow seemed most interesting during the first year, red during the first half of the second year, yellow again during the latter half. The use of Preyer's tests showed a decided superiority to Preyer's child in color perception, the California child having before she was two years old as complete a knowledge of color as Preyer's child at three; further, in this case, there was no difficulty in learning green and blue. Interest in form seemed to develop more rapidly than interest in color; no preference was shown for colored over uncolored pictures.

Miss Shinn confines herself to the statement of observed facts, carefully avoiding inferences and generalizations. Mr. Tracy has demonstrated *how much* has been done in the systematic study of children; Miss Shinn, *how* it has been done.

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**Introduction to Physiological Psychology**—By DR. THEODOR ZIEHEN, Professor in the University of Jena. Translated by C. C. VAN LIEW and Dr. OTTO BEYER. New York: Macmillan & Co., 1892, xiv, 284 p. Price $1.50.

A strong movement in recent psychology is that which attempts to establish the belief that all consciousness consists essentially of nothing but combinations of sensations and the revivals of former sensations; and that all successions of states of consciousness follow strictly mechanical laws. Whence it follows that in the mental life of the individual there exists no residual purely mental or spiritual element, beyond that which is a mere accompaniment to mechanically determined brain-

processes. The corresponding pedagogical conception is a fruitful one: namely, that the growing individual is an organism whose intellect, character, and will in their development follow unalterable laws, and hence can be accurately molded by the use of proper methods. No theory can give the educationist so great certainty of attaining the results aimed at, provided only the laws of mental growth are first known; and none can give so great inspiration in the study of these laws.

We have in English no more clear and concise account of psychology from this standpoint than that of Professor Ziehen. His work first appeared in Germany in 1891, and a second German edition has already appeared. The English translation is from the first edition, from which the second differs mainly in the addition of a chapter on emotions, and in various minor additions and alterations, which do not at all change the fundamental conceptions. One could wish that the translation had been done with more care; though its faults rarely obscure the meaning of the author. The chief actual errors are these: p. 68, last line, read *tension* in place of *relaxation;* p. 245, line 18, insert *not* after *are;* p. 275, l. 22, read *causal* instead of *casual.*

Professor Ziehen's position, briefly stated, is as follows: "Physiological psychology deals exclusively with those psychical phenomena to which concomitant physiological processes correspond. . . Wherever the physiology of the brain does not yet offer sufficient knowledge, physiological psychology may be allowed to investigate the bare psychical phenomena—as purely psychical—provided it is always guided by the thought that, even for these psychical phenomena, at least the *possibility* of concomitant cerebral processes must be shown (p. 2f). Our entire psychical being is composed of sensations and ideas; the latter are primarily produced as a rule by the combination of sensations, but combinations of ideas also take place within the mind itself, and in their totality correspond to no actually experienced combination of sensations (217f). Our thoughts are never voluntary; like all events, they are strictly necessitated. . . The succession of our ideas, or, expressed physiologically, the path of excitation in the cerebral cortex, is unequivocally determined by these four factors: associative relation, intensity, emotional tone, and grouping (188, 219). Our actions are as strictly necessitated as our thoughts (269). All actions, even the fittest and most

complicated, can be understood as the effect of the material processes of the brain (22)."

After two introductory chapters, in which the author shows the divisions of his subject and points out the typical relations of sensation, association, and action, more than a hundred pages are devoted to a discussion of sensations. The different qualities of sensation, their intensity and their emotional tone, are dwelt upon at length. Sensations leave purely material latent dispositions in the cerebral cortex, which may afterward be aroused as memory-images or ideas. Conceptions consist of combinations of such ideas, derived from sensations, associated with auditory and articulatory images of speech. The succession of ideas in consciousness depends on the law of association. Which of its numerous associates actually follows an idea does not depend on arbitrary choice, but is fully determined by the relative strength of association, the intensity, the emotional tone of the conflicting latent ideas, and by their "constellation" or grouping—a term for the mutual inhibition or re-enforcement of latent ideas. Judgments and conclusions are merely forms of the association of ideas; we consider them "correct" when there is an absence of contradictory ideas. Attention is not arbitrarily directed by a faculty superior to association, but is determined by factors similar to those which determine the succession of ideas. The feeling of self-activity in attention and voluntary thought is due to sensations of muscular tension. The complex idea of self results from bodily sensations, present ideas, and associations of past experiences. The phenomena of memory and other so-called faculties can all be reduced to association of ideas. Certain disturbances of the normal course of mental activity occur in illusions, insanity, sleep, hypnotism, etc. All movements are at first reflex or automatic. Gradually ideas of movement are required, and these are the only cause of voluntary action. The belief in freedom results from entirely explicable associations. These considerations do not do away with ethical distinctions, nor do they support materialism.

In spite of certain blemishes in translation the views of the author are in general well conveyed, and the book can be highly recommended to all who wish a short and clear outline of this science.

E. B. DELABARRE

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**Cornelii Taciti Dialogus de Oratoribus:** A Revised Text, with Introductory Essays, and Critical and Explanatory Notes—By W. PETERSON, M. A., LL. D., formerly Scholar of Corpus Christi College, Oxford; Principal of University College, Dundee, St. Andrews University. New York; Macmillan & Co., 1893, 212 p. Price $2.60.

The English world of letters is to be congratulated on the character and completeness of this first noteworthy edition of the *Dialogue*. Dr. Peterson has fulfilled the promise made by his work on the Tenth Book of Quintilian. The present work is an example of what may be accomplished by conscientious labor, combined with excellent critical judgment, and a genuine appreciation of the difficulties in which the subject is enveloped. It is the first to present, in an English dress, a revised text, an apparatus criticus, notes critical and explanatory, and an elaborate introduction dealing with the important subjects of authorship, style, manuscripts, and other matters essential to a thorough understanding of the treatise itself.

The book is not intended for schools, or as a text-book for ordinary undergraduate class-reading. Its scope is too wide for this. It is the result of an endeavor to treat the subject exhaustively. Space has not been spared either in the Introduction or the Commentary, and questions have been elaborately discussed which in a school edition should be merely alluded to. Like the editor's *Quintilian*, the book is meant for advanced scholars only. Regarded in this light, it is destined no doubt to fulfill its mission. It is intended as a companion volume to the *Institutio Oratoria*, published in 1891, the two books having originated in the same motive—"a wish to do something to remove from the scholarship of this country [England] the reproach of neglecting two of the most interesting specimens of Latin literature, or of relying for a knowledge of them almost entirely on foreign sources."

The most interesting, not to say the most valuable, part of the whole book, is the Introduction; for it is in the elaborate essays in this part of the work that Dr. Peterson has grappled with the more important problems which of necessity confront the conscientious editor of the *Dialogue*. These problems are largely of a literary and historical character. They relate to the question of authorship, the substance and aim of the *Dialogue*, the distribution of parts among the interlocutors, the style and language of the treatise (particularly as bearing upon the question of authorship), and the manuscripts. Each topic is discussed with a fullness and care that do credit to the

editor's scholarship and powers of research, while the style in which the various essays are written is such as to render the discussion of somewhat abstruse problems not merely readable, but decidedly attractive.

Following the essays is a very complete bibliography of editions, translations, and separate monographs on the different questions and points of interest involved.

The most interesting of the problems connected with the history of the *Dialogue*, and that which has occasioned the most searching inquiry, is the question of authorship. Was the *Dialogue* written by Tacitus, or by someone else? Could the author have been Quintilian, Suetonius, or Pliny the Younger? Dr. Peterson gives, in the first ten pages of his first essay, a history of opinion on this point, beginning with the time at which the Tacitean authorship first fell under suspicion, in 1508, and then adds an independent examination of the actual data bearing upon the question; and while acknowledging that any verdict must be more or less subjective, and determined by the personal pre-suppositions, not to say prejudices, of the individual, decides that in the case of the literary problem before him there seem to be data enough for a pretty confident acceptance of the traditional view.

The last three pages of the Introduction are occupied by the bibliography already referred to. It is noticeable that, in a list of forty-eight dissertations, only one is written in English, namely, that which is entitled *Critical notes on the Dialogus of Tacitus*, by Alfred Gudeman, published in the *American Journal of Philology*, vol. xii. pp. 327–347, and 444–457.

Dr. Peterson closes his Introduction with a note referring to Professor Gudeman's forthcoming edition of the *Dialogus*, the appearance of which, he says, will be expected with interest.

In the Commentary, the critical and exegetical elements are largely mingled, although a special apparatus criticus is placed immediately beneath the text. The text has been constituted with much care, and is a positive advance upon its predecessors, not excepting such recent editions as those of Halm, Novak, Wolff, and the third edition of Georg Andresen. But the editor's judgment appears at times to fall short of its usual acumen; as, *e. g.*, in ch. v. 11, where, as Gudeman shows (A. J. P. No. 47, p. 329), Aper yields to Secundus' request to be excused from acting as judge in the contemplated debate. Dr. Peter-

son argues for the opposite view, although to do so is, as Gudeman says, to require the author of the *Dialogue* to set certain machinery at work, only to abandon it—for Secundus does not appear in the capacity of judge at all. On the other hand, Dr. Peterson seems to be right in accepting *accepi* (the reading of the Harleianus) at ch. i. 14, instead of altering the reading of the manuscripts to *e præstantissimis viris . . . excepi*, with Gudeman. But while it is evident that Dr. Peterson has faithfully perused Professor Gudeman's two papers on the *Dialogue*, published in the *American Journal of Philology*, Nos. 47 and 48, it is interesting to observe that on most disputed points connected with the constitution of the text the English editor is at distinct variance with the American. Space will not allow of further comparison; but the opinion may be expressed that the text of the present edition would have been even further improved, had it been brought more often into conformity with Professor Gudeman's decisions.

As regards their exegetical features the notes leave little to be desired. The illustrative passages from other authors are suitable, and not too numerous. Quintilian and Cicero furnish the largest number, as indeed they should do—especially the Tenth Book of the *Institutio*, *the De Oratore*, and the *Brutus*. The other works of Tacitus are also levied upon with good taste and judgment, and there is a sprinkling of quotations aptly selected from Horace, Vergil, Livy, Seneca, Juvenal, Petronius, and the two Plinys. The views of other (German) scholars are not infrequently added to those of the editor himself, and the text is elucidated by occasional apt and forceful renderings into English. In all these matters a fair balance is preserved between excess and defect.

So important and useful a contribution to classical scholarship should not be excluded from the intelligent study of younger readers. Accordingly it is to be hoped that an abridged edition, corresponding to the smaller edition of the Quintilian, will issue soon from the Clarendon Press, for service in colleges and schools.

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## IX

# EDITORIAL

The movement for the introduction of departmental teaching into grammar schools, in the hope of raising the standard and improving the quality of the instruction, has received the very important indorsement of the Boston supervisors and of a committee of the Boston School Committee. Mr. Ellis Peterson, reporting for the supervisors, carefully examines the reasons advanced for and against departmental teaching, and comes to the conclusion that it will improve the health, scholarship, and skill of the teachers, and the knowledge, mental power, and character of the pupils. The deficiencies of the teacher who strives to include in her view half a dozen different subjects are strongly stated. Such teachers, "while engaged in their professional work, find but little time to deepen and extend their knowledge of the subject-matter of what they teach or of the methods of teaching. It is plain that the thorough study of one or two departments would give them greater knowledge and teaching power than the cursory and superficial study of several departments. As it is, the wonders and beauties that always delight the child are, for the most part, blindly passed by; the relation of cause to effect is not clearly traced; the law of unity in diversity is but feebly expounded; and facts, whether of mountains or of molehills, are presented in false proportions. Change the organization of the school so that the teachers will each instruct in one or two departments of study, and they—if they are of the right metal—will be likely to acquire an accurate and extensive knowledge of their subjects and of the right methods of teaching these." Mr. Peterson also boldly attacks the objection that departmental instruction would weaken the discipline of the schools and would prevent the teachers from forming and strengthening the character of their pupils. He takes the opposite ground, and points out that the increased teaching power and skill of the several departmental teachers and the increased interest of the pupils will lessen the occasions for misconduct and for what is termed "discipline."

As a result of their study of the question the supervisors recommend that departmental instruction in grammar schools be permitted, and that the principals of grammar schools be advised to organize, if practicable, the instruction in them departmentally. This recommendation has been indorsed by the standing committee to which the School Committee referred the matter, and will doubtless be carried out. The result of the working of the plan in Boston will be awaited with interest.

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The annual report of President Low of Columbia has just been given to the public. It discusses two facts of more than usual importance. The first is the arrangement by which the Teachers College becomes part of the university system of Columbia, which thus completes a most extensive equipment—the most extensive in the world—for the scientific study of education and the professional training of secondary school and college teachers. It is of no small moment that the advantages of the alliance are open to women on equal terms with men, owing to the kindly co-operation of Barnard College.

The second fact of general interest is Mr. Joseph Pulitzer's generous gift of one hundred thousand dollars to Columbia, for the purpose of making it possible for a certain number of poor boys, graduates of the grammar schools of the city of New York, to get the advantage of the best possible college training. New York City possesses no high schools, unless the City and Normal Colleges be classed as such, and therefore it is necessary to bridge over in some way the gap between the grammar school and colleges of the first rank. The income of Mr. Pulitzer's gift is to be used in paying for the tuition of not more than ten boys a year during the three years which must be passed at a high school. At the first competition for the Pulitzer scholarships 111 boys presented themselves, coming from 39 different grammar schools. Mr. Pulitzer's gift is of the most practical and helpful character, and its influence ought to be felt in every grammar school in New York.

President Low shows that Columbia had in 1892–93, 226 officers of instruction and 1641 students. Of the latter 497—or 30.3 per cent.—were graduates of a college or scientific

school. This number of genuine university students is the measure of Columbia's standing as a university. The cosmopolitan character of the student body is shown by the fact that it was recruited from 42 States and Territories and from 15 foreign countries. No fewer than 105 American colleges and 12 foreign institutions had representatives among the graduate students.

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Dr. J. G. Fitch, who for many years has been inspector of training colleges in the English Education Department, retired from office with the beginning of the present year, he having reached the age at which retirement from the civil service is compulsory. For more than thirty years Dr. Fitch has wielded a potent influence on the educational administration and practice of England, and his public addresses and published writings have made his name familiar to teachers who read, both in this country and on the continent of Europe. His Cambridge *Lectures on teaching* have been widely read in America, and are far superior, both in matter and in literary form, to anything on the subject that has been written here. Happily Dr. Fitch is in excellent health and, now that routine duties are less pressing, will doubtless complete one or two books on education that have long been planned. Despite his retirement from office, Dr. Fitch is sure to continue in active educational service. It is reported that he has been invited to become a member of the Royal Commission on Secondary Education, shortly to be appointed. The appointment would be an ideal one, and a positive assurance that the Commission would deal with the subject referred to it in the most intelligent and practical manner.

Dr. Fitch and his friend, the late Mr. Quick, have accomplished wonders, each in his own way, for the promotion of the scientific study of education among English teachers. The former by his official supervision, his pungent criticisms, and his effective constructive thinking, and the latter by his historical and critical writing, have been perhaps the chief factors in bringing about the present interest in education in England, and in directing that interest toward profitable ends.

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The reception that the Report of the Committee of Ten is meeting with ought to give great satisfaction to those con-

cerned in its preparation. The leading journals and magazines that have a large constituency of intelligent and cultivated readers—such as *The Nation, Harper's Weekly, The Outlook, The Independent, The Dial,* the *Century Magazine,* and the *Atlantic Monthly*—have discussed it at considerable length, and while the criticism is discriminating, the judgments are, on the whole, very flattering. The great importance and significance of the report is recognized by them all.

It is as much of a compliment to the report that it is sneered at by some persons as that it is well received by others. The small but noisy class of persons who conspire to produce what have been capitally described as the "fly-by-night educational papers," and those worthies who regard a college as a blot on the face of the earth and a college professor as *ipso facto* an ignoramus, are beating the tom-toms and rallying the faithful against the report, apparently because President Eliot had a hand in framing it. This sort of thing is very puerile and contemptible and vulgar; but the individuals referred to take themselves so seriously and are taken so seriously by some of those who ought to know better, that a word of warning is often necessary. It is a disgrace to the country, and a severe reflection upon the intelligence of many thousands of our teachers, that these "fly-by-night" papers have the circulation they do.

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Mr. Herbert Spencer has published a most interesting and instructive sketch of his friend, Professor Tyndall, in the course of which he gives a compact but comprehensive statement of the true character of the imagination and its place in education. Perhaps there is nothing in what Mr. Spencer says that has not been said before, but it has not been so well or so briefly said. His words are these:

"There prevail, almost universally, very erroneous ideas concerning the nature of imagination. Superstitious peoples, whose folklore is full of tales of fairies and the like, are said to be imaginative; while nobody ascribes imagination to the inventor of a new machine. Were this conception of imagination the true one, it would imply that, whereas children and savages are largely endowed with it, and whereas it is displayed in a high degree by poets of the first order, it is deficient in those having intermediate types of mind. But, as rightly con-

ceived, imagination is the power of mental representation, and is measured by the vividness and truth of this representation. So conceived, it is seen to distinguish not poets only, but men of science: for in them, too, 'imagination bodies forth the forms [and actions] of things unknown.' It does this in an equal and sometimes even in a higher degree; for, strange as the assertion will seem to most, it is nevertheless true that the mathematician who discloses to us some previously unknown order of space relations, does so by a greater effort of imagination than is implied by any poetic creation. The difference lies in the fact that whereas the imagination of the poet is exercised upon objects of human interest and his ideas glow with emotion, the imagination of the mathematician is exercised upon things utterly remote from human interest, and which excite no emotion, the contrasted appreciations of their respective powers being due to the circumstance that whereas people at large can follow, to a greater or less extent, the imaginations of the poet, the imaginations of the mathematician lie in a field inaccessible to them, and practically non-existent.

"This constructive imagination (for we are not concerned with mere reminiscent imagination) here resulting in the creations of the poet and there in the discoveries of the man of science, is the highest of human faculties. With this faculty Professor Tyndall was largely endowed. In common with successful investigators in general, he displayed it in forming true conceptions of physical processes previously misinterpreted or uninterpreted; and again, in conceiving modes by which the actual relations of the phenomena could be demonstrated; and again, in devising fit appliances to this end. But to a much greater extent than usual he displayed constructive imagination in other fields. He was an excellent expositor: and good exposition implies much constructive imagination. A prerequisite is the forming of true ideas of the mental states of those who are to be taught; and a further prerequisite is the imagining of methods by which, beginning with conceptions they possess, there may be built up in their minds the conceptions they do not possess. Of constructive imagination, as displayed in this sphere, men at large appear to be almost devoid; as witness the absurd systems of teaching which in past times, and in large measure at present, have stupefied and still stupefy children by presenting abstract ideas before they have any concrete ideas from which they can be

drawn. Whether as lecturer or writer, Professor Tyndall carefully avoided this vicious practice.

"In one further way was his constructive imagination exemplified. When at Queenwood College he not only took care to set forth truths in such ways and in such order that the comprehension developed naturally in the minds of those he taught. He did more: he practiced those minds themselves in constructive imagination. He so presented his problems as to exercise their powers of investigation. He did not, like most teachers, make his pupils mere passive recipients, but made them active explorers."

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There is something very inspiring in the way in which the leaders of educational opinion in the Southern States press the subject of more and better provision for schools upon the attention of legislators. In many States matters of this kind, like too many others, are left to a lobby; a respectable and unselfish lobby, to be sure, but still a lobby. In Virginia, the Carolinas, Georgia, and other States, however, it is customary for the legislature to invite an educationist of eminence to address them formally on the needs of the schools, and then to print the address for public distribution.

Dr. J. L. M. Curry, well known as the general agent of both the Peabody and the Slater Funds, is untiring in work of this kind, and is frequently heard by legislatures in the Southern States at their own invitation. A few months since Dr. Curry addressed the legislature of Georgia, and the printed document containing his speech shows it to have been an eloquent, tactful, and persuasive appeal for industrial education and for increased appropriations for common school purposes. The effect of a manly, straightforward appeal of this kind must be far greater than even the most persistent lobbying, and besides it has a valuable effect in influencing and directing public opinion. It would be well if every State legislature could have its educational system and needs presented to it by an expert in just the same way that Dr. Curry presented those of Georgia to its law-makers.

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The following letter from Professor Scott of the University of Michigan explains itself. The statement to which he refers,

however, was not an editorial expression of opinion, but occurred in a review of the new volume of *Minerva*. One purpose of this statement was to call out just such authoritative statements of facts as that of Professor Scott. In no other way can the real universities be distinguished from the colleges and "universities falsely so called." As to the suggestions in the concluding paragraph of Professor Scott's letter, it may safely be said that they are tacitly assumed in any discussion of what constitutes a university. With the conditions laid down by our reviewer this is by no means the case.

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*To the Editor of the* EDUCATIONAL REVIEW:

In the February number of the REVIEW, p. 193, you single out certain institutions of higher learning which in your opinion are universities proper, and by exclusion name several others whose standing you regard as doubtful. In making this distinction, your purpose, I take it, was not to separate the sheep from the goats, but merely to indicate the extent of your information. You meant, that is to say, that evidence was before you to show that Harvard, Yale, Cornell, Columbia, Johns Hopkins, the University of Chicago, Clark, and Leland Stanford, meet the three requirements which you specify, but that with regard to the University of Pennsylvania, the University of Michigan, the University of Wisconsin, and the rest, your information was not sufficiently recent or trustworthy to enable you to pass judgment upon them.

Assuming that this interpretation of your meaning is correct, I have much pleasure in calling your attention to the state of affairs at this institution. (1) All matters pertaining to our graduate school are administered by a graduate council which acts independently of the faculty. (2) The number of students enrolled in the graduate school is at present seventy. (3) While the claim of the institution to the title of university does not rest upon its professional schools alone, the character of the work done in these schools is, in large part at least, strictly scientific. Graduate courses are offered in the departments of medicine, law, and pharmacy, and the number of students pursuing advanced studies is about one-third the number enrolled in the graduate school.

Permit me to suggest as additional requisites of a real univer-

sity (1) a body of instructors who are themselves engaged in special research, and (2) adequate equipment in the way of books, instruments, and laboratories.

I am, sir, very truly yours,

FRED. N. SCOTT

UNIVERSITY OF MICHIGAN, ANN ARBOR,
February 5, 1894

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*Harper's Weekly*, which has recently published a number of admirable papers on educational subjects, prints, in the issue for February 10, a graphically illustrated article dealing with the common school statistics of the United States as reported for the year 1889–90. The charts that accompany the article bring out very strikingly the now familiar fact that while the school enrollment of the Northern States is falling off, that of the Southern States is rapidly increasing. The rapid growth of the public school system in the South and extreme West is one of the most gratifying features of our recent history, but the forces at work in the Eastern States are so numerous and so complex that any direct comparison is very difficult and not infrequently misleading. It must be remembered, for example, that in the Southern States the schools are open on an average only from 88 to 97 days a year; while in the North Atlantic States the average is 166.6, and in the Western 135.1. The average for the whole United States is 134.3.

Mr. F. W. Hewes, the writer of the article referred to, assigns as causes for the falling-off in school enrollment in the North the great influx of emigrants who have no ambition to educate their children, the decrease in the size of families, and more systematic and scientific methods of computing school attendance. Doubtless these causes are all in operation, but there are at least two others of no small importance: One is the rapid increase of parochial schools, especially in the large cities. The second is the inability of the cities on the Atlantic seaboard to provide school accommodations rapidly enough. It is asserted that in New York and Brooklyn alone, there would be an immediate increase of twenty per cent. in the public school enrollment if a sufficient number of properly equipped buildings were provided.